

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Inventor : SNELL, Alan Kay

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### **37 CFR § 1.132 DECLARATION**

I, Richard F. Anderson, hereby declare that:

1. My resident address is 8153 Audubon Street NW, Massillon, Ohio, 44646
2. I am the President of KPC—Master's Craft International, Inc., an Ohio corporation that manufacturers industrial shrink wrapping machines and provides shrink wrap film.
3. I have over thirty-five (35) years experience in the packaging industry.
4. I hold a bachelor's degree in packaging engineering, which degree I received from Michigan State in 1969.
5. I further hold a masters degree in packaging engineering, which degree I received from Michigan State in 1970.
6. From 1970-1977, I was employed as a packaging engineer with Cryovac, a packaging company in Spartanburg, South Carolina. While at Cryovac, my duties and responsibilities involved working with packaging machines and processes, including those for vacuum-packing food products such as meats and cheeses.
7. From 1977-1983, I was employed with Engraph, another packaging company. I initially served as a packaging engineer for all products including meats which, were shrink packaged and vacuum-packaged. I progressed into management and sales during the later part of my employment with Engraph.
8. From 1983-1986, I was employed with Paramount Packaging. I served as operations manager for several plants of Paramount Packaging, which company provided packaging

for disposable diapers and feminine hygiene products. Kimberly-Clark was one of the larger customers of Paramount Packaging.

9. From 1986-1990, I was employed with a packaging company by the name of Jaite, which company focused on packaging for soft drinks, other foodstuffs, and medical supplies. I served as a general manager at Jaite.
10. From 1990-1997, I was employed with Sealright and served as Senior Vice President of Flexible Packaging, overseeing four domestic and two foreign operations including agents in 42 countries. The domestic operations included manufacturing of packaging for disposable diapers.
11. From 1997-1999, I was employed as operations manager and innovations manager with PacOne, a packaging company. PacOne provided packaging such as pouches and overwrap for candy and laminations for the meat and poultry industry.
12. From 1999-2002, I was employed with Primary Packaging, another packaging company. I served as general manager for Primary Packaging, which provided packaging services and products primarily to the horticulture industry and the construction industry.
13. Since 2004, I have served as the President and CEO of KPC—Master's Craft International, Inc., a company engaged in the manufacture and distribution of packaging equipment and materials.
14. I am identified as an inventor on the following nine U.S. patents, all of which are in the field of packaging: USPN 6,533,711, titled "*Recloseable pouch with reinforced handle and method of making same*"; USPN 6,461,044, titled "*Recloseable bag formed on form, fill and seal machine*"; USPN 6,293,897 titled "*Securement of a pad to the inside of a bag*"; USPN 6,234,944, titled "*Securement of a pad to the inside of a bag*"; USPN 6,126,317, titled "*Configuration resisting tear propagation in container sidewall*"; USPN 6,089,367, titled "*Securement of a pad to the inside of a bag*"; USPN 6,053,635, titled "*Recloseable pouch with reinforced handle*"; USPN 5,464,285, titled "*Bag with perforated opening*"; and USPN 3,777,445, titled "*Method and Apparatus for Pricing Case Packed Canned Goods*".
15. In particular, USPN 5,464,285, titled "*Bag with perforated opening*," a copy of which is attached as Exhibit A, specifically relates to a plastic bag containing a plurality of diapers having an improved handle that improves convenience to a consumer in carrying the bag.

16. My opinions set forth herein are based on my education and work experiences in the packaging industry as set forth above, and my consideration of the following documents.
17. I have read and considered the disclosure of U.S. Patent Application No. 10/906,828 to Snell (the "Snell Application"), a copy of which is attached as Exhibit B.
18. I also have read and considered U.S. Patent No. 6,721,080 B1 to Habib et al.(the "Habib Patent"), a copy of which is attached as Exhibit C.
19. I have read and considered U.S. Patent No. 2,764,859 to Hanselmann (the "Hanselmann Patent"), a copy of which is attached as Exhibit D.
20. I also have read and considered portions of the file history of the Snell Application including the Office Action mailed on July 21, 2005 (the "Office Action"), a copy of which is attached as Exhibit E.
21. Still further I have read and considered claims 1, 2, 8, and 21 (the "Snell Claims"), a copy of which is attached as Exhibit F.
22. It is my opinion that the Ordinary Artisan would understand that the field of endeavor of the Snell Application is the packaging of disposable diapers and feminine hygiene products (the "Snell Field of Endeavor").
23. It is my opinion that a person having ordinary skill in the Snell Field of Endeavor (the "Ordinary Artisan") would be a person who has had broad exposure to packaging of disposable diapers and feminine hygiene products and to the details of the manufacture, distribution, and marketing of disposable diapers and feminine hygiene products to the extent such that manufacture, distribution, and marketing relate to the packaging materials.
24. It is further my opinion that the Ordinary Artisan would have at least an associate degree of formal education in a technical field, such as chemistry, material science, or packaging.
25. It is my opinion that I have at least the level of skill of the Ordinary Artisan, if not a greater level of skill.
26. It is my opinion that the Ordinary Artisan would understand that the Snell Application addresses the broad problem of providing greater consumer convenience to consumers of disposable diapers.

27. First, my opinion is based on the recognition in the Snell Application that the carrying of diapers “on the go” by consumers is inconvenient. *See* p. 2, para. 5 (“Storage and carriage of clean diapers is often inconvenient. For instance, disposable diapers are generally rather bulky items not given to easy storage or carriage in a purse, pocket, or otherwise about the person. In addition, the problem can be [exacerbated] in that diapers can be subject to expansion from the typically somewhat compressed state in which they are normally provided to consumers, especially in circumstances where the diapers are subject to contact with other items within a storage bag. For example, many disposable diapers are provided in a bi-fold configuration meant to minimize the space taken in storing the diaper. However, after being removed from their original packaging, bi-fold diapers often unfold or otherwise expand to consume an even larger storage space. Thus, disposable diapers can become more bulky and difficult to carry than when in their nominal, packaged condition.”).
28. Second, my opinion is based on the recognition in the Snell Application that the carrying of a “diaper bag” containing disposable diapers and diaper accessories for diaper changes “on the go” by consumers is often inconvenient. *See* p. 3, para. 7 (“While a conventional diaper bag provides a dedicated container in which diapers and diaper accessories can be stored and carried, the requirement of carriage of a diaper bag often adds to the difficulty of a caretaker's responsibility. For example, parents of young children often must carry a purse or briefcase for the parent's own needs. In addition to this, the parent may need to carry the young child; and, of course, the child's diaper bag. This can leave the parent with no free hands for other tasks.”).
29. The Snell Application addresses the problem of providing greater consumer convenience by vacuum-packing a single, disposable diaper so that the diaper is pocket sized, *see* p. 17, para 70 (“volumetrically reducing a size of the diaper to a size convenient for carriage and storage of the diaper”; “the term ‘convenient size’ is understood to refer to a size and configuration of a diaper that can be easily and conveniently stored in a pocket, handbag, or purse”), and by providing a diaper changing kit for a single diaper change, wherein the diaper of the kit is vacuum-packed and the diaper changing kit is pocket sized *see* pp. 19-20, para 77 (“Such kits...will fit neatly into a pocket, purse or other baggage.”).

30. It is my opinion that the Ordinary Artisan would understand that the field of endeavor of the Hanselmann Patent is the packaging of bulky textile items (the “Hanselmann Field of Endeavor”).
31. It is my opinion, the Snell Field of Endeavor is different from the Hanselmann Field of Endeavor.
32. It is my understanding that the U.S. Patent Office defines the field of endeavor of the Snell Application and the field of endeavor of the Hanselmann Patent to be the same, i.e., the packaging of compressible items. Office Action, p. 6 (“Habib et al., Hanselmann, and Narawa et al. are [analogous art] because they are from the same field of endeavor: packaging of compressible items”; *see also* p. 7 (“Habib et al., Hanselmann, and Bonk are analogous art because they are from the same field of endeavor: packaging of compressible items.”)).
33. In my opinion, there is no field of endeavor in the flexible packaging industry that equates with this overly broad definition of “the packaging of compressible items.” For example, bread is compressible; however, the packaging of bread falls within the field of the packaging of fresh, non-frozen bakery products, which field is distinct and different from the Snell Field of Endeavor and the Hanselmann Field of Endeavor.
34. It is my opinion that the Ordinary Artisan would understand that the problem addressed in the Hanselmann Patent is the efficient utilization of space in storing and transporting bulky, compressible items for the purposes of increasing payload capacity. *See* col. 1, lines 18-30.
35. Specifically, the Hanselmann Patent identifies the problem of transporting cold weather military survival kits by aircraft, where “it is highly important to pack the kits in as small a volume as possible since space on an airplane is always at a premium,” col. 2, lines 67-69.
36. The Hanselmann Patent recognizes that the bulky sleeping bags and bulky clothing of the cold weather kits include insulating materials having lots of air in interstices thereof, and the Hanselmann Patent addresses the problem by vacuum-packing these bulky items. The Hanselmann Patent also recognizes that these items can be molded during vacuum-packing in order to conform to the shape of irregular spaces on the airplane, such as the

contour of the seat of the pilot, for “the very efficient utilization of space.” *See* col. 3, lines 4-12.

37. It is my opinion that the Ordinary Artisan would understand that the problem addressed in the Snell Application is different from the problem addressed in the Hanselmann Patent.
38. In my opinion, the Ordinary Artisan would not have been expected to look for a solution to the problem addressed in the Snell Application by reference to the Hanselmann Patent or to the Hanselmann Field of Endeavor due to the above-described differences in the problems and in the fields of endeavor.
39. Furthermore, in my opinion, the Hanselmann Patent is not reasonably pertinent to the problems identified and addressed in the Snell Application.
40. It is my opinion that the Ordinary Artisan would understand that the field of endeavor of the Habib Patent is the packaging of disposable diapers and feminine hygiene products (the “Habib Field of Endeavor”).
41. It is my opinion that the Ordinary Artisan would understand that the problem addressed in the Habib Patent is having the necessary items to change a diaper when away from home. *See* col. 1, lines 14-17.
42. Specifically, the Habib Patent identifies that a problem with a diaper bag is that the diaper bag includes a large number of different items, such as diapers and accessories, and that when away from home the diaper bag may have more of one item than what is needed and none of another item that is needed. In such event, the missing item then must be purchased typically in large quantities even if such large quantities are not needed at that moment when away from home. Similarly, the Habib Patent identifies the problem that sometimes items for only a single diaper change are desired but are not individually available for purchase for a single diaper changing, e.g., grandparents babysitting for an evening may have to purchase large supplies of an item even if only a single diaper changing is required. A secondary problem addressed in the Habib Patent is that diaper bags, due to the large number of items carried therein, are often bulky and cumbersome, and are particularly inconvenient to transport and store in crowded public facilities. *See* col. 1, lines 14-36.

43. The solution and invention of the Habib Patent comprises a diaper changing kit for purchase that includes all of the items that are necessary for a single diaper changing in a single package. Moreover, the items are packaged in a defined manner to provide a compact kit. *See col. 1, line 50-col. 2, line 13.*
44. I compared the Snell Claims with the disclosure and teaching of the Habib Patent.
45. In comparing the invention of claim 1 of the Snell Claims with the Habib Patent, it is my opinion that the Habib Patent fails to disclose or suggest to the Ordinary Artisan a diaper changing kit as recited in claim 1 for any of several different reasons.
46. First, the Habib Patent fails to disclose or suggest a single, compressed, disposable diaper vacuum-sealed within a substantially air impermeable encasement as recited in claim 1. I note that the Habib Patent discloses that the exterior packaging of the diaper kit preferably is made from a plastic wrap film and is waterproof. However, a waterproof plastic wrap film is not inherently air impermeable and, typically, most plastic wrap film used in flexible packaging is not air impermeable because air impermeable film is more expensive than air permeable film. Indeed, there is no disclosure anywhere in the Habib of an air impermeable encasement container a diaper.
47. Second, there is no suggestion or motivation set forth in the Habib Patent that would lead the Ordinary Artisan to further volumetrically reduce the size of the diaper beyond the folded diaper disclosed and taught in the diaper changing kit of the Habib Patent.
48. In the Habib Patent, the diaper accessories are specifically packed in an ordered sequence and folded within the diaper, which then is disposed within the exterior packaging of the diaper kit. Volumetrically reducing the size of the diaper would interfere with this packaging of the diaper accessories within the diaper.
49. Moreover, the exterior packaging of the diaper kit defines the “billboard space” for graphics and consumer information, including the advertising, directions, and contents of the diaper kit. Volumetrically reducing the size of the diaper kit would be disadvantageous in that this billboard space consequently would be reduced, and nothing in the Habib Patent discloses or suggests any offsetting benefit to such reduction.
50. The diaper kit also “most preferably” is intended to be displayed from a display rod at the point of purchase of a retail store and includes a one inch (1 in.) top header portion having a centered hole for receiving the display rod. Due to this great preference, the

Ordinary Artisan would not seek to minimize the size of the diaper kit beyond the size disclosed in the Habib Patent.

51. Third, the Habib Patent fails to disclose or suggest a diaper kit having an accessory that is *not* disposed within the diaper. The disclosure and teaching of the Habib Patent is the positioning of the accessory within the diaper, which is simply inconsistent with the invention recited in claim 1 of the Snell Claims.
52. Fourth, the Habib Patent fails to disclose or suggest a diaper kit that is dimensioned to fit within a pocket of an article of clothing for carriage on one's person, as recited in claim 1 of the Snell Claims.
53. In comparing the invention of dependent claim 2 of the Snell Claims with the Habib Patent, it is my opinion that the Habib Patent further fails to disclose or suggest seals that extend a width or length of a diaper of the diaper kit that are airtight.
54. In comparing the invention of dependent claim 8 of the Snell Claims with the Habib Patent, it is my opinion that the Habib Patent further fails to disclose or suggest a diaper kit having an encasement in which a diaper is vacuum-sealed with the length, width, and height each being not greater than four inches.
55. In comparing the invention of dependent claim 21 of the Snell Claims with the Habib Patent, it is my opinion that the Habib Patent further fails to disclose or suggest a diaper kit having an encasement in which a diaper is vacuum-sealed with the sum of two of the length, width, and height being less than 10 cm with no single dimension exceeding 10 cm.
56. In considering the Hanselmann Patent, it is my opinion that the Hanselmann Patent includes no motivation or suggestion that would lead the Ordinary Artisan to volumetrically reduce the size of the single diaper of the diaper kit of the Habib Patent by vacuum-packing the diaper as found in claim 1.
57. In considering the Hanselmann Patent, it is my opinion that the Hanselmann Patent includes no motivation or suggestion that would lead the Ordinary Artisan to reduce the size of the diaper kit of the Habib Patent so that the diaper kit would be dimensioned to fit within a pocket of an article of clothing for carriage on one's person, as recited in claim 1. The teaching of the Hanselmann Patent is not directed to an item or kit for

carriage within a pocket. In the diaper kit of the Habib Patent, the diaper kit has a preferred size for marketing and retail purposes.

58. Moreover, even if the Ordinary Artisan applied the vacuum-packing method to the diaper kit of the Habib Patent, then the diaper and all of the accessories of the diaper kit would be vacuum-sealed in accordance with the teaching of the Habib Patent, which is in contrast to the invention recited in claim 1 where an accessory is not vacuum-sealed with the disposable diaper.

59. Additionally, even if the Ordinary Artisan applied the vacuum-packing method to the diaper kit of the Habib Patent, then the exterior packaging of the diaper kit necessarily would include a valve or seal in a face thereof in accordance with the teaching of the Hanselmann Patent. This would be in contrast to the invention recited in claim 2 where all airtight seals extend a width or a length of the disposable diaper.

60. The teaching of the Hanselmann Patent is directed to the reduction of bulky compressible items for increasing efficiency in utilization of a fixed, defined space, such as the interior of an airplane. In the diaper kit of the Habib Patent, the diaper kit has a preferred size for marketing and retail purposes and, thus, the teaching of the Hanselmann Patent provides no apparent benefit to volumetrically reducing the size of the diaper as the diaper kit, itself, is not reduced in size. Accordingly, the Ordinary Artisan would not volumetrically reduce the size of the diaper in the diaper kit of the Habib Patent to the size limitations in claims 8 and 21 based on the teaching of the Hanselmann Patent.

61. It is my opinion that the Ordinary Artisan would have understood in 2001 that vacuum-packing technology would be utilized in two general scenarios. The first scenario is vacuum-packing of perishable products to preserve the perishable products. The second scenario is vacuum-packing of compressible products for greater efficiency in shipping and storage during product distribution, of which scenario the Hanselmann Patent is representative.

62. As of the date below, I am unaware of any use prior to 2001 of vacuum-packing technology for the purpose of enabling a consumer to carry a product in a shirt or pants pocket for greater consumer convenience.

63. I have no direct or indirect financial interest, nor any other interest, in the Snell Application, any related application thereto, or in the assignee thereof, which is DIAPEROOS, LLC of Charlotte, North Carolina.

I hereby declare, under penalty of perjury, that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

/January 22, 2006/  
Date

/Richard F. Anderson/  
Richard F. Anderson

## **EXHIBIT A**

# Exhibit A



US005464285A

## United States Patent [19]

Anderson

[11] Patent Number: 5,464,285

[45] Date of Patent: Nov. 7, 1995

[54] **BAG WITH PERFORATED OPENING**

[75] Inventor: **Richard F. Anderson**, Overland Park, Kans.

[73] Assignee: **Venture Packaging, Inc.**, Charlotte, N.C.

4,252,269	2/1981	Peppiatt .
4,539,705	9/1985	Baines .
4,573,203	4/1989	Peppiatt .
4,934,535	6/1990	Muckenfuhs et al. .
4,966,286	10/1990	Muckenfuhs .
5,036,978	8/1991	Frank et al. .
5,219,229	6/1993	Sengerwald .....
5,282,687	2/1994	383/10 Yee .....
		383/207

[21] Appl. No.: 241,598

[22] Filed: May 12, 1994

[51] Int. Cl.<sup>6</sup> ..... B65D 33/08

[52] U.S. Cl. ..... 383/10; 383/66; 383/207

[58] Field of Search ..... 383/9, 10, 207, 383/66

Primary Examiner—Stephen P. Garbe

Attorney, Agent, or Firm—Shefte, Pinckney & Sawyer

[57] **ABSTRACT**

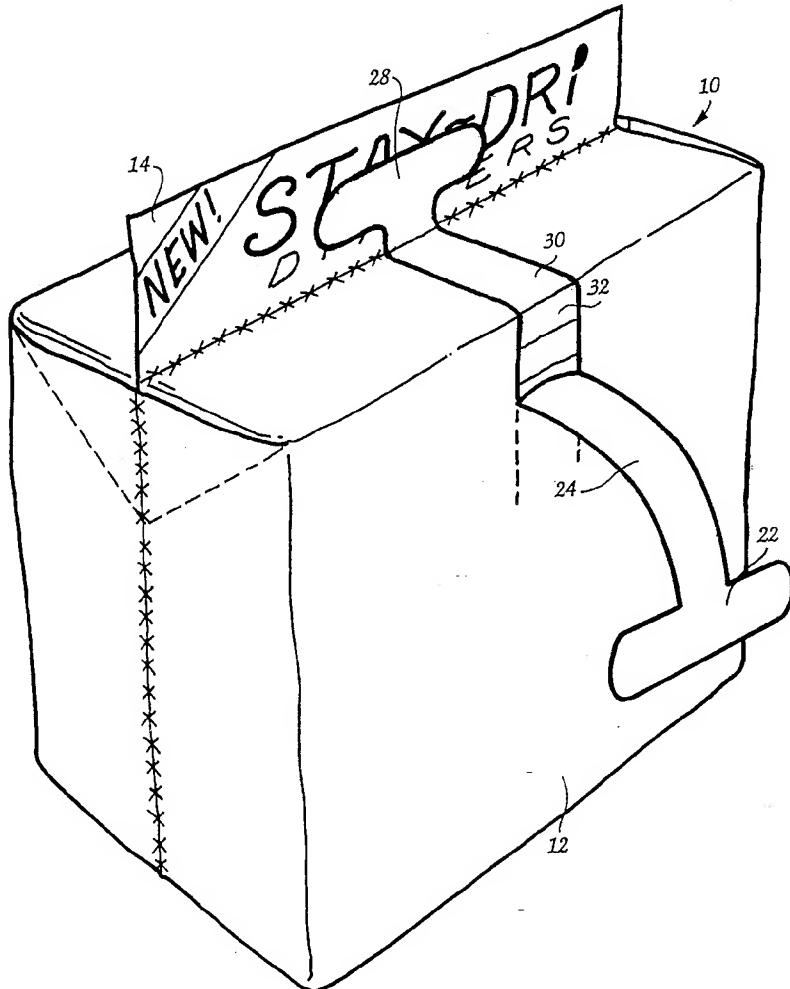
A plastic bag for containing merchandise which includes a plurality of walls forming a compartment for receiving and containing the merchandise, a generally flat flap connected at the top wall of the bag so as to be capable of extending outwardly therefrom, and perforations formed in the flap and in the container walls in a particular pattern that permits the perforations in the flap to be separated to form a handle opening in such flap without opening the bag itself, and which can be further opened to provide an access opening in the bag to permit removal of the merchandise therefrom.

6 Claims, 4 Drawing Sheets

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,306,335	12/1942	Feigenbutz .....	383/207
3,227,359	1/1966	Hanlon .....	383/207
3,520,470	7/1970	Korn et al. .	
3,730,421	5/1973	Stanley .	
3,873,735	3/1975	Chalin et al. .	



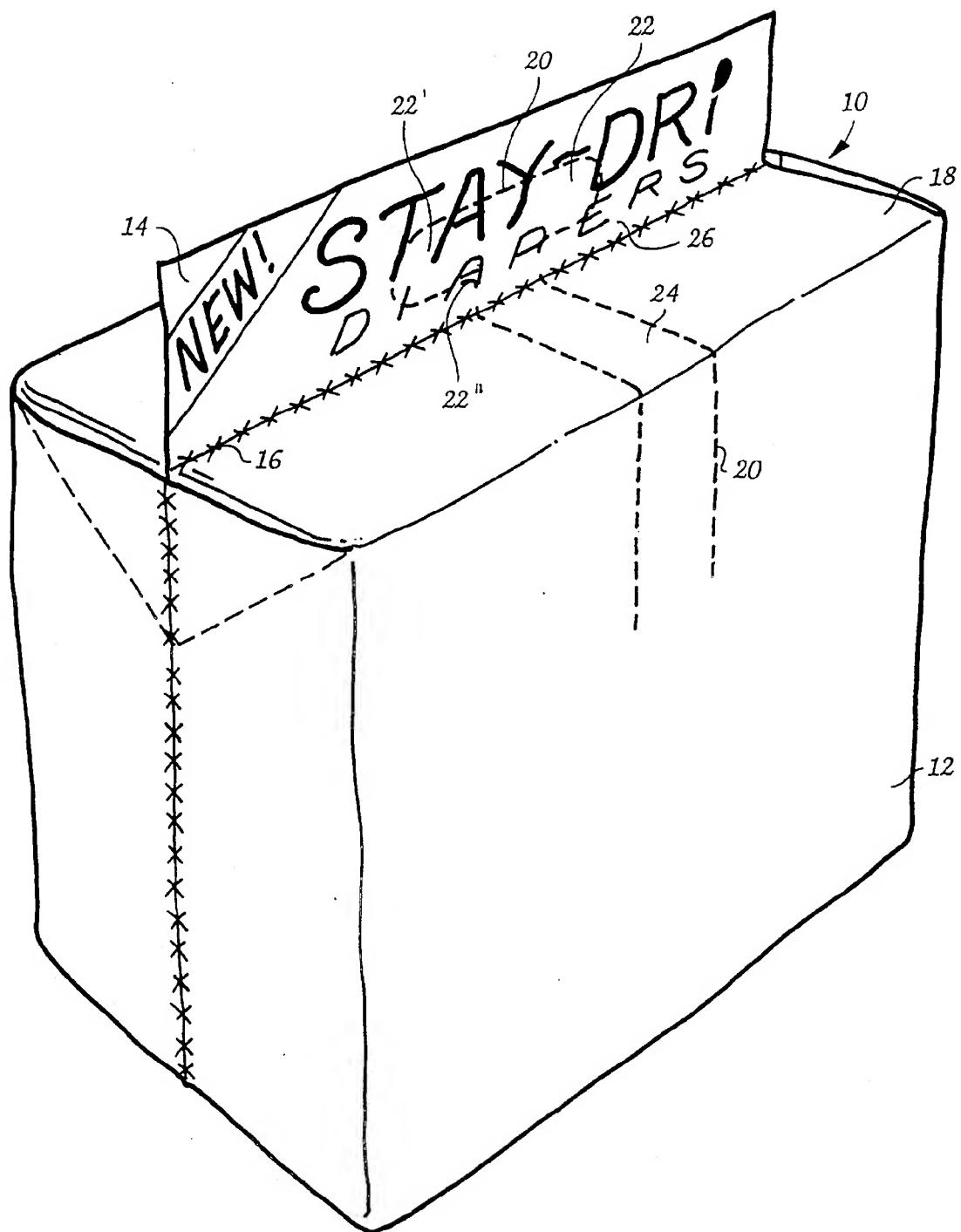


Fig. 1

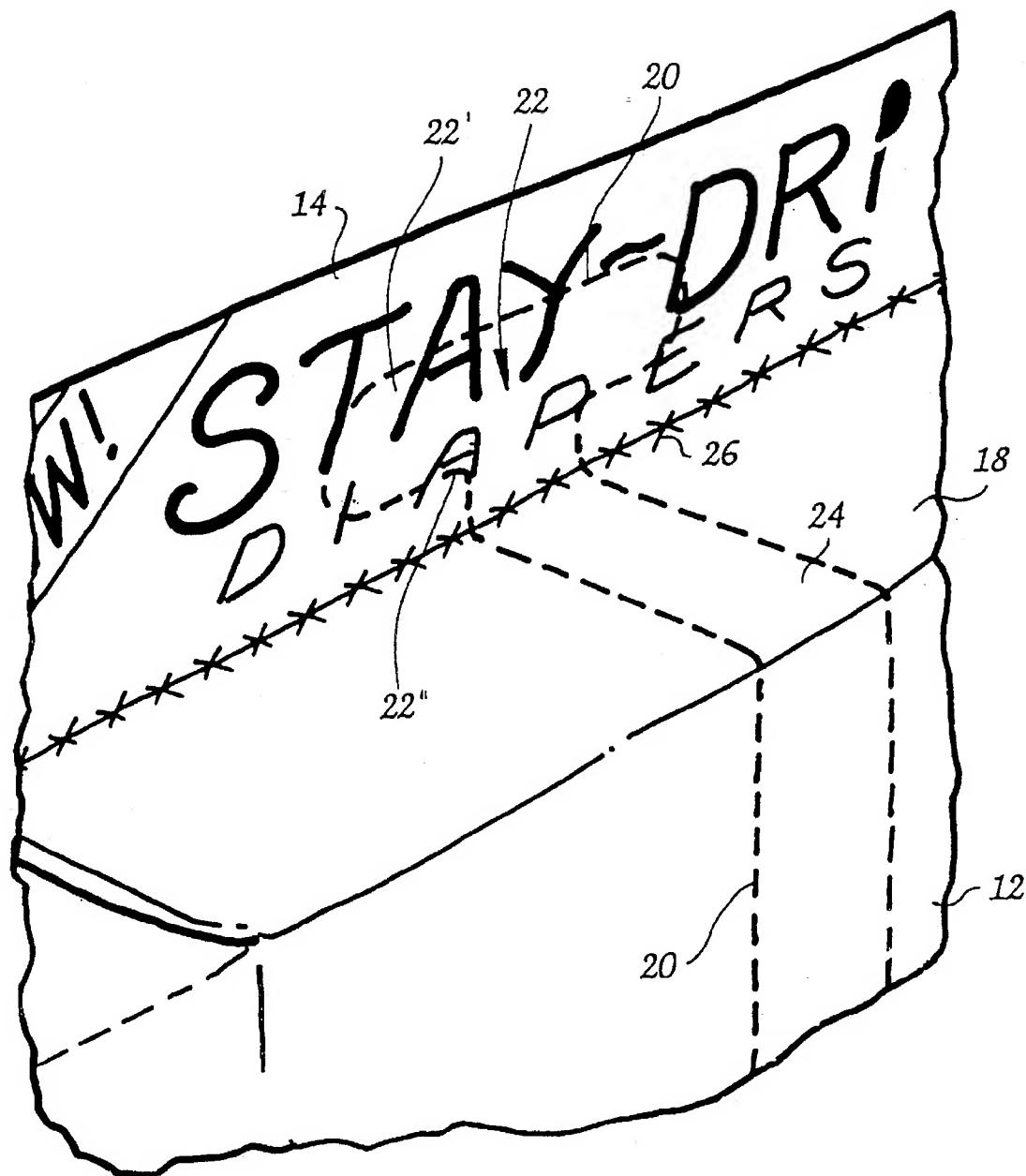


Fig. 2

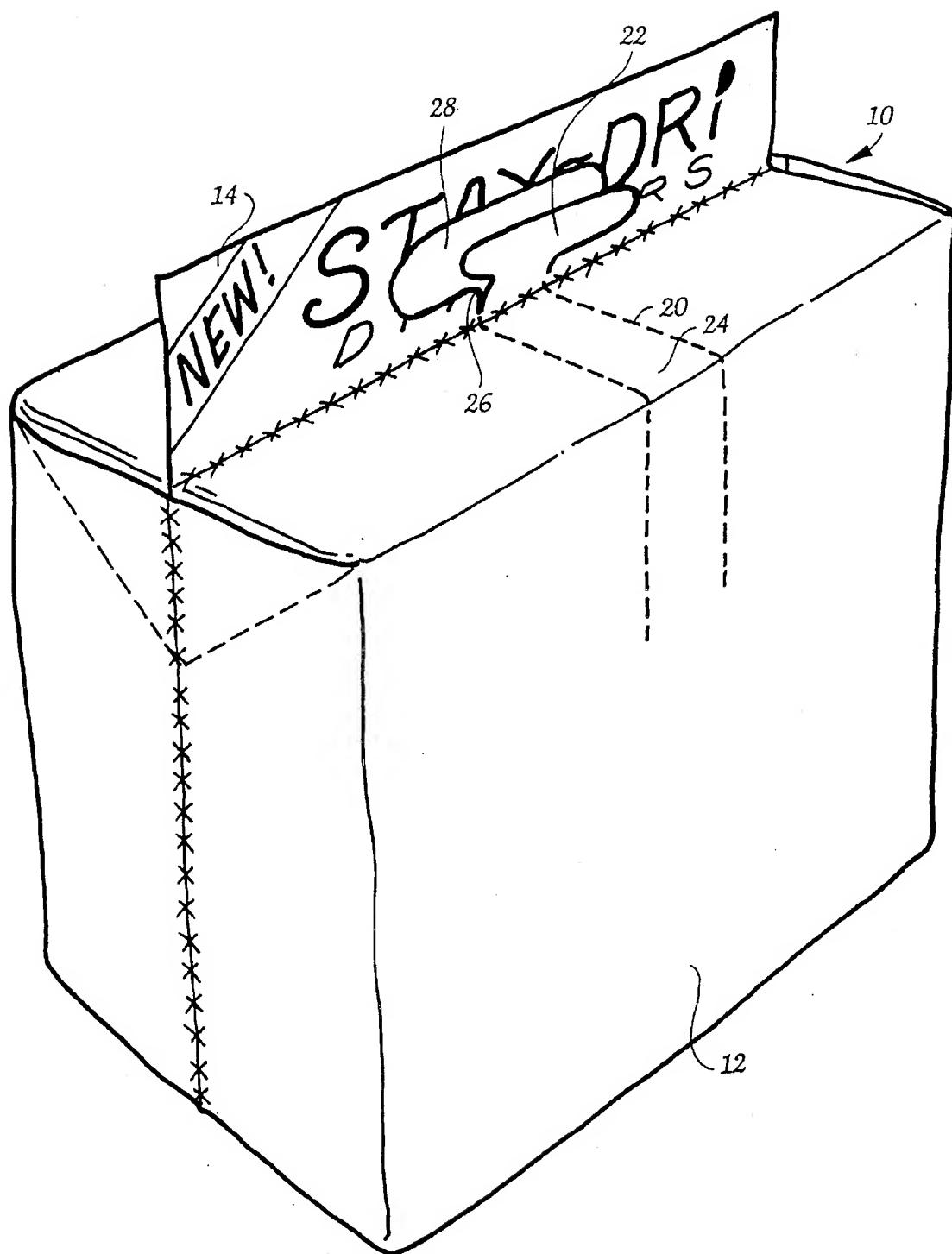


Fig. 3

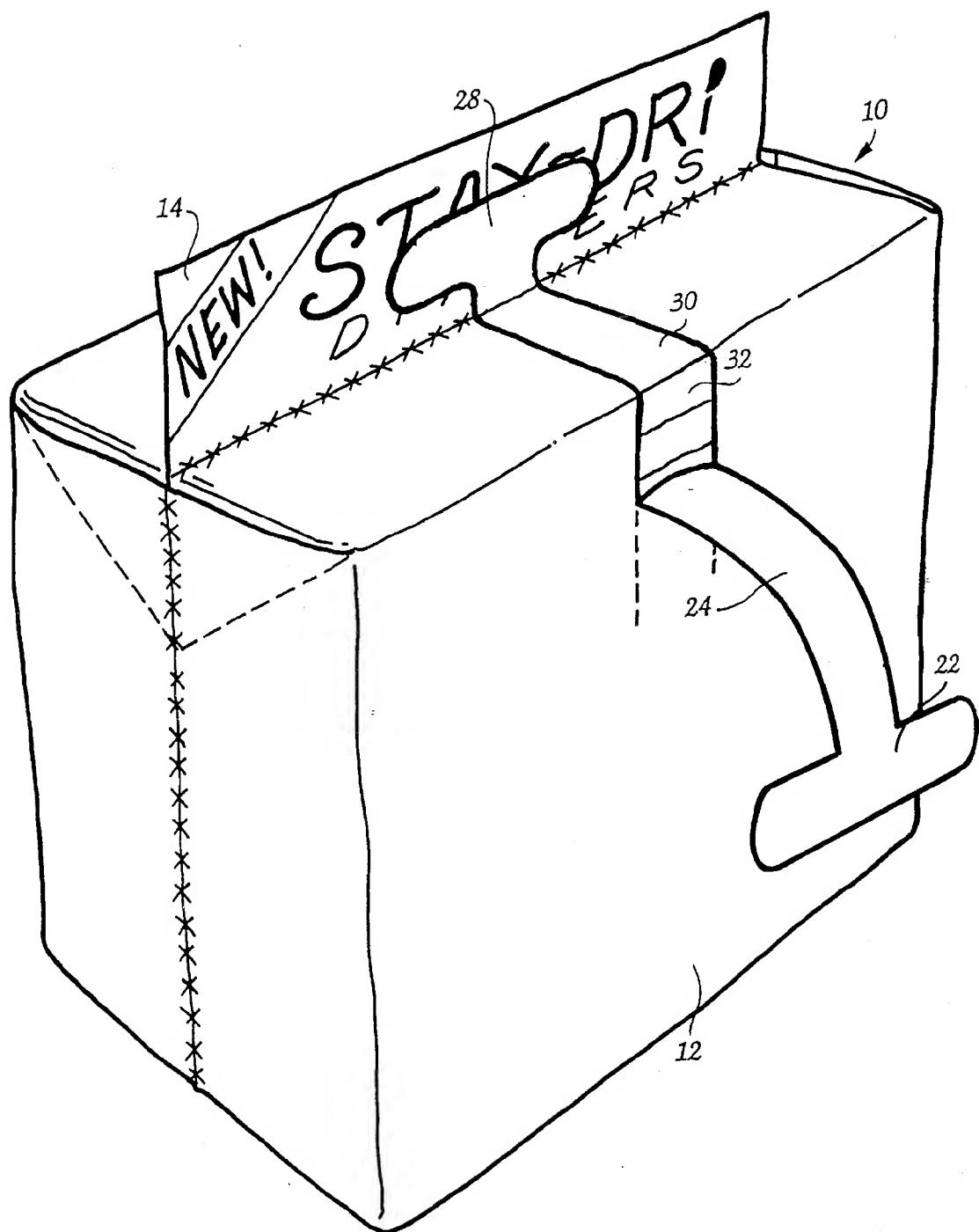


Fig. 4

## BAG WITH PERFORATED OPENING

## BACKGROUND OF THE INVENTION

The present invention relates generally to bags for receiving and containing merchandise, and more particularly to plastic bags that are provided with a handle to allow customers to carry the bag more easily.

It is now common practice to manufacture bags from a thin transparent material, such as polyethylene or a similar heat-sensitive plastic, and to supply such bags to producers of a wide variety of consumer merchandise (e.g., diapers) who then load the bags with such merchandise and provide the filled bags to retail outlets for sale to consumers. These filled bags are frequently stacked together, such as along aisles located in the retail outlet, where they can be seen by consumers, and when the consumer decides to buy the product, the bag is lifted from the stack and carried away. When the merchandise contained in the bag is heavy and/or bulky, the bags are preferably made with some type of handle that will assist the consumer in carrying the bag.

Plastic bags with handles take a variety of forms and one such bag is disclosed in Baines U.S. Pat. No. 4,539,705 and includes a handle that is formed as a separate piece of plastic which is initially disposed within the gusset of the bag and sealed to the walls of the bag to provide a bag that is capable of withstanding heavy loads while at the same time presenting a neat appearance.

Another typical plastic bag with a handle is disclosed in Peppiatt U.S. Pat. No. 4,252,269, and this bag includes a handle that is either formed from the same piece of plastic material as the bag shell, or from a separate piece of material that is heat sealed at the top wall of the bag. In either case, the handle piece is a relatively large flap that projects outwardly from the top wall of the bag and this flap is formed with an opening through which the consumer inserts his or her hand when carrying the bag. This type of handle bag has the advantage of permitting the handle to serve as a "billboard" in that advertising and informational text and illustrations can be presented on the handle so as to catch the eye of and, hopefully, attract passing consumers. However, the aesthetic appeal of such billboard handles, and the continuity of the textural material and illustrations presented thereon, are adversely affected by the relatively large hand-receiving opening that is located in the middle of the handle flap.

Plastic bags of this general type may also be provided with some arrangement to assist the consumer in opening the bag to remove the contents therefrom. In most cases, the plastic bags are filled with merchandise and then completely sealed by the manufacturer to protect such merchandise, and the consumer often encounters some difficulty in penetrating the bags to remove its contents. There are a number of known bags which include some type of construction to facilitate opening the bag, such as a perforation extending along the top surface of the gusset of the bag as disclosed in Peppiatt U.S. Pat. No. 4,573,203, or a combination of tabs and perforations that allow the consumer to grasp the tab and pull away a portion of the bag as disclosed, for example, in Muchenfuhs U.S. Pat. No. 4,966,286 and 4,934,535 and Chalin U.S. Pat. No. 3,873,735. It is also known to provide plastic bags with perforations that permit the handle portion of the bag to partially separate from the bag so that the handle can be more easily grasped, as disclosed, for example, in Stanley U.S. Pat. No. 3,730,421 and Korn U.S. Pat. No. 3,520,470.

## SUMMARY OF THE INVENTION

In accordance with the present invention, a bag is formed of a thin, flaccid material to contain merchandise and the like, and the bag includes a plurality of walls which form a compartment for receiving and containing such merchandise, a generally flat handle flap connected at one of its edges to the exterior of one of the walls so as to be capable of extending outwardly therefrom, and a line of weakness, preferably in the form of perforations, formed in the flap and in the wall to which the flap is attached to permit the bag material to be selectively open along the line of weakness. The line of weakness is disposed in a pattern that includes a first portion forming a handle opening in the flap of a predetermined size large enough to receive a human hand when the plastic material is separated along the first portion of the pattern and a second portion forming an access opening in the container wall to which the flap is attached, such opening being of a predetermined size large enough to permit removal of the merchandise through the access opening when the bag material is separated along the second portion of the pattern.

In the preferred embodiment of the present invention, both the first and second portions of the line of weakness pattern are formed by perforations and the line of weakness includes a small unperforated bridge disposed intermediate the first and second portions of the pattern, such bridge being dimensioned to permit the material of the flap to be opened along the perforations of the first portion of the pattern by application of a first opening force applied at the first portion of the pattern without opening the perforations of the second portion of the pattern and to permit the wall to which the flap is attached to be selectively opened along the perforations of the second portion of the pattern by the application of a second opening force applied to the aforesaid unperforated bridge. Moreover, the first portion of the pattern is preferably generally T-shaped so as to include an elongated strip located generally centrally of the flap and to include a narrow leg extending between such strip and the edge of the flap that is attached to the adjacent wall, and the second portion of the pattern also includes a narrow leg that corresponds to the narrow leg of the T-shaped portion and is generally aligned therewith. The unperforated bridge is disposed between these aligned narrow legs.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a plastic bag constructed in accordance with the preferred embodiment of the present invention;

FIG. 2 is a detail view illustrating the pattern of perforations in the handle portion and the container portion of the bag illustrated in FIG. 1;

FIG. 3 is a perspective view of the bag illustrated in FIG. 1, illustrating the perforated portion of the bag being partially opened to create the handle opening in the flap of the bag; and

FIG. 4 is a perspective view similar to FIG. 3 and illustrating the perforated portion of the bag being substantially fully opened.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Looking now in greater detail at the accompany drawings, the bag 10 of the present invention is preferably formed of a plastic material such as a thin sheet of polyethylene or a similar heat-sensitive plastic, and in the preferred embodi-

ment the bag has a parallelepiped compartment 12 for receiving and containing merchandise therein, and a generally flat flap 14 that is heat sealed along line 16 at one of its edges along the extent of the gusset wall 18 of the container portion 12 so that the flap 14 is capable of extending outwardly therefrom as illustrated in FIG. 1 or lying flat against the gusset wall 18.

As best seen in FIG. 2, the flap 14 and the container portion 12 are formed with perforations 20 arranged in a particular pattern that includes a first T-shaped portion 22 formed in the flap 14, such T-shaped portion including an elongated shape 22' that is located generally centrally of the flap 14 and a narrow leg portion 22" extending toward the edge of the flap 14 that is attached to the gusset wall 18. The pattern of perforations 20 also includes a second portion 24 formed in the container 12 as a narrow leg extending along the gusset wall 18 and along one of the side walls of the container 12. The second narrow leg portion 24 is generally aligned with the narrow leg portion 22" in the flap 14, and both narrow leg portions have substantially the same width. However, as best seen in FIG. 2, there is a relatively small unperforated bridge 26 located adjacent the heat sealed line 16 and disposed between the adjacent ends of the flap leg portion 22" and the container narrow leg portion 24, this bridge 26 being dimensioned to permit the T-shaped portion 22 to be separated from the flap 14 by the application of a first opening force applied to the T-shaped portion without also opening the perforations of the second narrow leg portion 24 in the gusset wall 18, but permitting the second narrow leg portion 24 to be separated from the gusset wall 18 by the application of a second opening force applied at the bridge 26, all as explained in greater detail below.

It will be understood that the bags 10, as best seen in FIG. 1, are usually preprinted with illustrations and textural material, after which the bags are provided to the producer who then fills the bags with the product to be contained therein and the bottom of the bag is then sealed so that the interior of the container portion 12 is essentially free of contamination. The bags filled with merchandise are ultimately shipped to retail outlets, where they are usually displayed in a conventional manner to customers shopping at such retail outlets. It will be apparent that the textural material and illustrations which are preprinted on the bag serve a significant function in attracting the attention of consumers passing by the bags which are on display, and in providing brand identification and other information that may be useful to the consumer in deciding which product to buy.

The bag 10 of the present invention offers a new dimension to this "billboard" function of the bag by providing a flat, uninterrupted surface on which additional textural material and illustrations can be placed at a point where they are particularly visible to passing consumers. More specifically, the flap 14 of the bag 10 is located at the top wall 18 so that it is at a very visible location whether it is lying flat against the top wall 18 or projecting upwardly therefrom as best seen in FIG. 1. Also, because there is no handle opening in the flap 14, and because the perforations 20 are barely visible, the flap 14 provides a relatively large and uninterrupted surface on which a significant amount of textural material and illustrations can be attractively presented.

Additionally, the flap 14 of the present invention also provides all of the advantages of a conventional handle for such bags. A consumer who has selected the product in one of the bags 10 of the present invention can quickly and easily form a handle opening 28 in the flap 14 by applying a first opening force at the T-shaped portion 22 of the pattern of

perforations 20, whereby the T-shaped portion 22 separates from the flap 14 as illustrated in FIG. 3 to leave the handle opening 28 in the flap 14. Moreover, it will be noted that the bridge 26 is dimensioned so that the first pressure needed to separate the T-shaped portion 22 will not be sufficient to tear the material across the bridge 26 and, therefore, only the T-shaped portion 22 will be separated along the perforations 20. Accordingly, the integrity of the sealed container portion 12 is left intact, and the product remains fully contained therein without any danger of contamination.

After the bag 10 has been carried to its destination, using the handle opening 28 to carry the bag 10, it can thereafter be easily opened to remove product therefrom by applying a second force in the form of a pull on the separated T-shaped portion 22, such pull being of a magnitude that will cause the bridge 26 between the aligned narrow portions 22" and 24 to tear, whereupon the second narrow leg portion 24 separates from the top wall and side wall of the container 12 along the perforations 20 therein as best illustrated in FIG. 4 to thereby provide an access opening through which the contained product 32 (e.g., diapers) can be easily removed.

It will therefore be readily understood by those persons skilled in the art that the present invention is susceptible of broad utility and application. Many embodiments and adaptations of the present invention other than those herein described, as well as many variations, modifications and equivalent arrangements will be apparent from or reasonably suggested by the present invention and the foregoing description thereof, without departing from the substance or scope of the present invention. Accordingly, while the present invention has been described herein in detail in relation to its preferred embodiment, it is to be understood that this disclosure is only illustrative and exemplary of the present invention and is made merely for purposes of providing a full and enabling disclosure of the invention. The foregoing disclosure is not intended or to be construed to limit the present invention or otherwise to exclude any such other embodiments, adaptations, variations, modifications and equivalent arrangements, the present invention being limited only by the claims appended hereto and the equivalents thereof.

I claim:

1. A bag formed of a thin, flaccid material for containing merchandise and the like, said bag including:
  - (a) a plurality of walls forming a compartment for receiving and containing said merchandise;
  - (b) a generally flat flap connected at one of its edges to the exterior surface of one of said walls so as to be capable of extending outwardly therefrom; and
  - (c) a line of weakness formed in said flap and in said one wall to permit said bag material to be selectively opened along said line of weakness, with said line of weakness being disposed in a pattern that includes a first portion forming a handle opening in said flap of a predetermined size large enough to receive at least a portion of a human hand when said bag material is separated along said first portion of said pattern, and a second portion forming an access opening in said one wall of a predetermined size large enough to permit removal of said merchandise through said access opening when said bag material is separated along said second portion of said pattern.
2. A bag as defined in claim 1 wherein said pattern of said line of weakness includes perforations in said flap forming said first portion thereof, and perforations in said one wall forming said second portion thereof, and includes a small

unperforated bridge disposed intermediate said first and second portion of said pattern, said bridge being dimensioned to permit said material of said flap to be opened along the perforation of said first portion by the application of a first opening force applied at said first portion of said pattern without opening the perforation of said second portion, and to permit said wall to be selectively opened along the perforation of said second portion by the application of a second opening force applied at said bridge.

3. A bag as defined in claim 2 wherein said first portion of said pattern is generally T-shaped and includes an elongated strip located generally centrally of said flap and a narrow leg extending between said elongated strip and said edge of said flap that is attached to said one wall, wherein said second portion of said pattern includes a narrow leg corresponding to said narrow leg of said first pattern portion and generally aligned therewith, and wherein said bridge is disposed between said aligned narrow legs.

4. A bag as defined in claim 1 wherein said bag is formed of plastic material, wherein said one wall is a gusset, and wherein said one edge of said flap is heat sealed to said gusset.

5. A bag as defined in claim 1 wherein said first portion of said pattern is generally T-shaped and includes an elongated shape located generally centrally of said flap and a narrow leg extending between said elongated shape and said edge of said flap that is attached to said one wall, and in that second portion of said pattern includes a narrow leg corresponding to said narrow leg of said first pattern portion and generally aligned therewith.

6. A bag formed of plastic material for containing merchandise and the like, said bag including:

(a) a plurality of walls arranged as a right angle paralleliped to form a compartment for receiving and con-

taining said merchandise, with one of said walls being a gusset;

(b) a generally flat flap heat sealed at one of its edges along the extent of said gusset wall so as to be capable of extending outwardly therefrom; and

(c) perforations formed in said bag to permit opening said bag therewith and disposed in a pattern that includes:

(i) a first generally T-shaped portion forming an elongated shape positioned generally centrally within said flap and dimensioned to receive a human hand when opened along said perforation, and forming a narrow leg extending from said elongated shape and toward said heat seal between said flap and said gusset;

(ii) a second portion forming a narrow leg extending along said gusset and generally aligned with said narrow leg of said first pattern portion for providing an access opening through which said merchandise can be removed from said bag when the perforated second pattern portion is opened; and

(iii) a small unperforated bridge disposed between said aligned narrow legs of said first and second pattern portion, and at said heat seal, said bridge being dimensioned to permit said plastic bag to be opened along the perforation of said first pattern portion by the application of a first force applied at said first portion without opening the perforation of said second pattern portion, and to permit said gusset wall to be selectively opened along the perforation of said second pattern portion by the application of a second opening force applied at said bridge.

\* \* \* \* \*

## **EXHIBIT B**

# Exhibit B



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**Snell**

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(54) **VACUUM-PACKED DIAPER KIT**

(60) Provisional application No. 60/451,433, filed on Mar. 4, 2003.

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(57) **ABSTRACT**

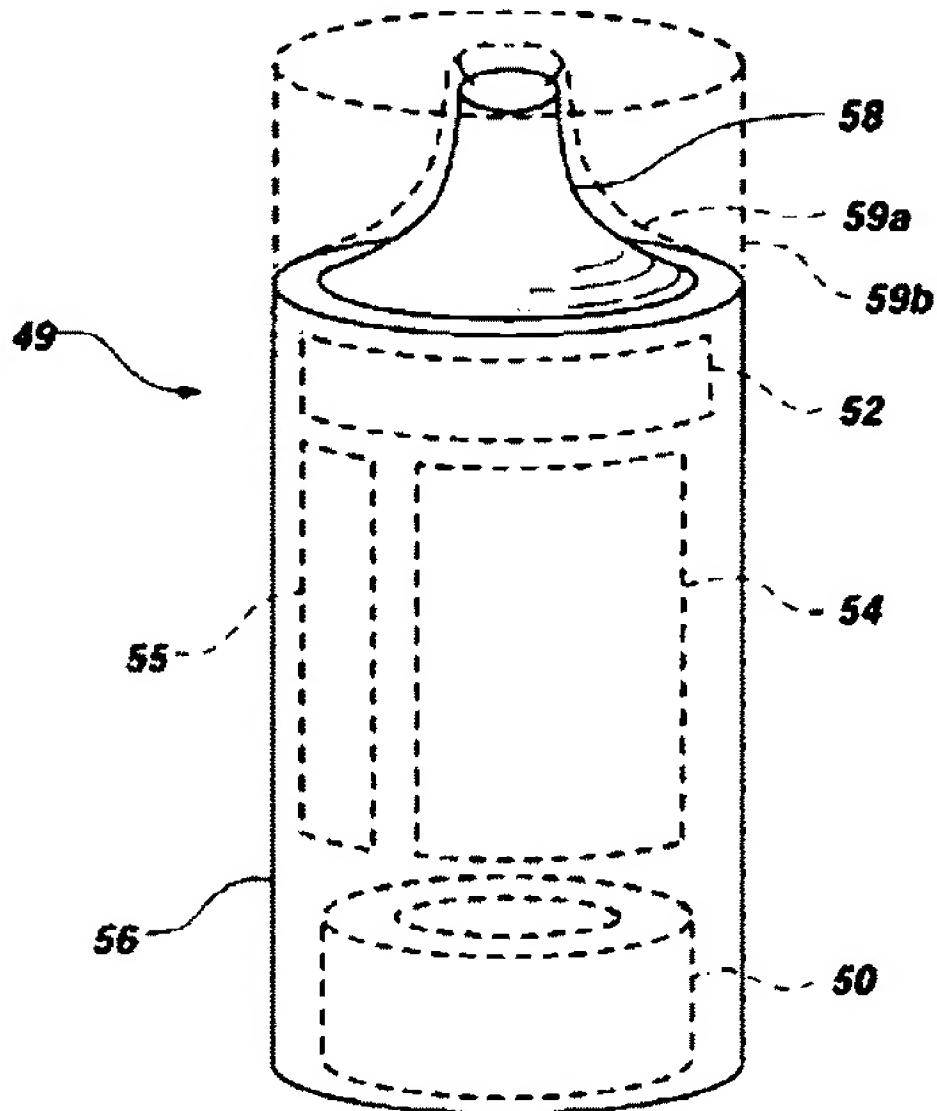
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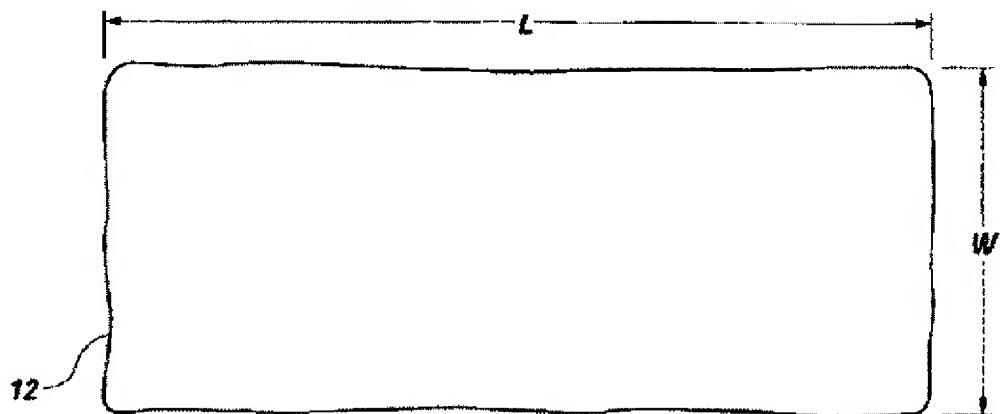
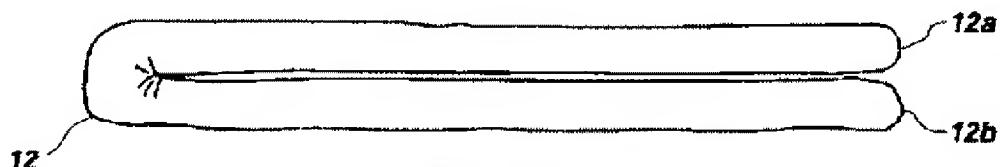
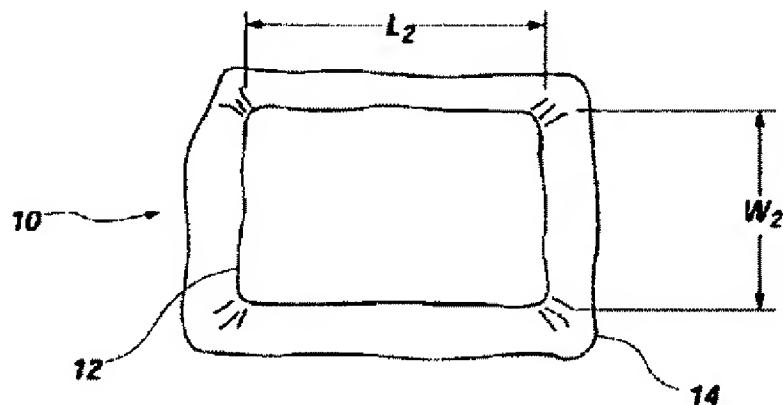
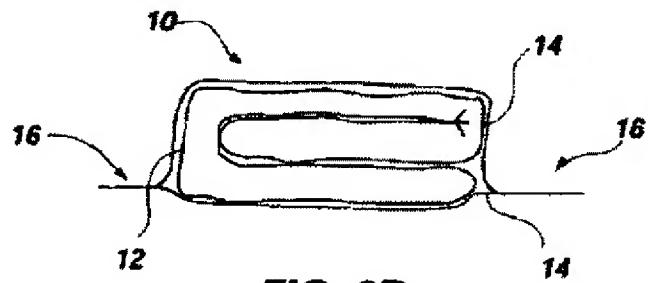
(22) Filed: **Mar. 8, 2005**

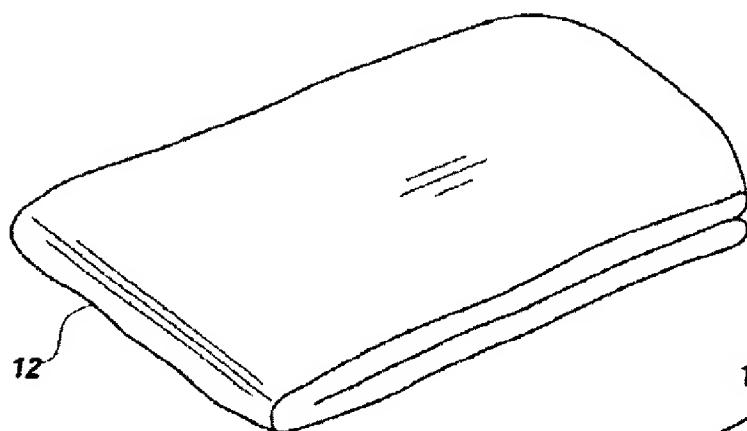
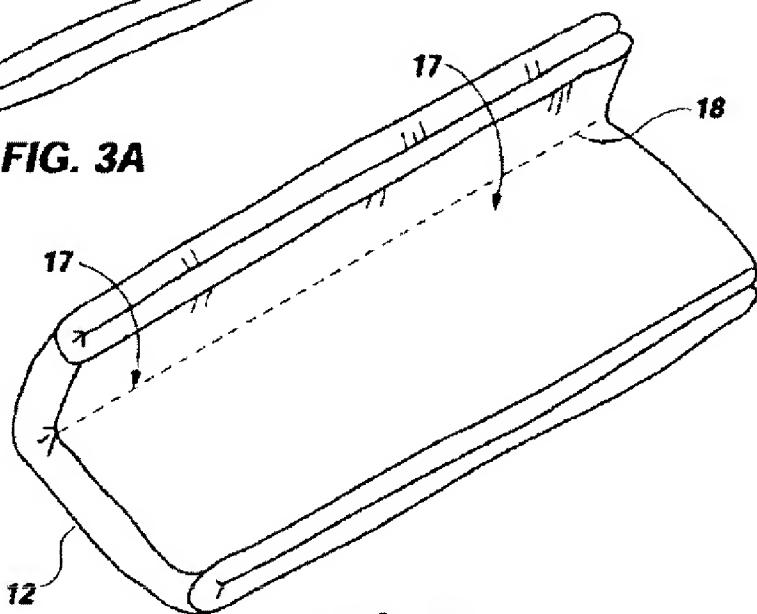
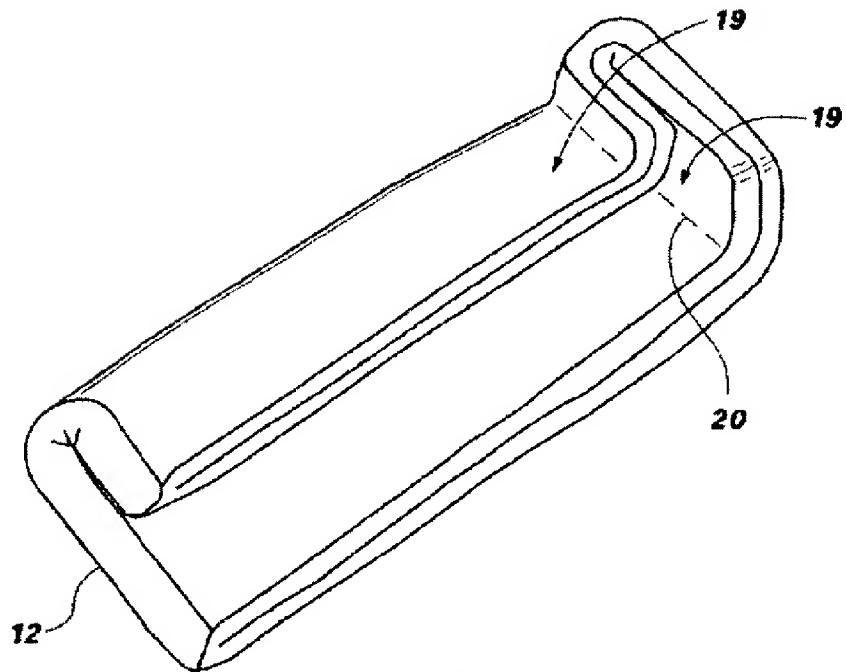
## Related U.S. Application Data

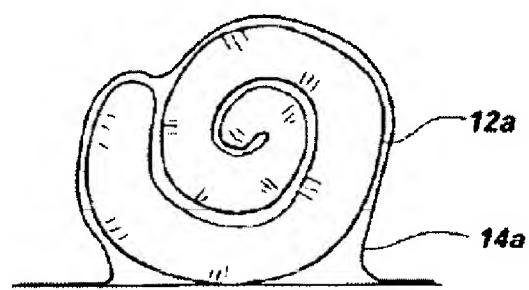
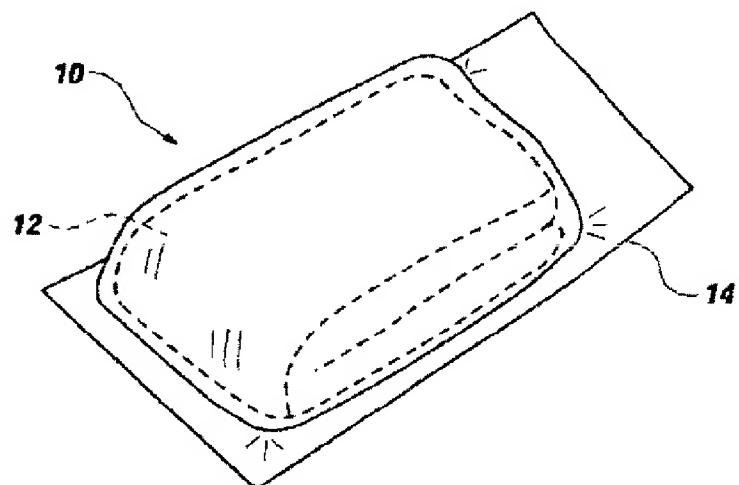
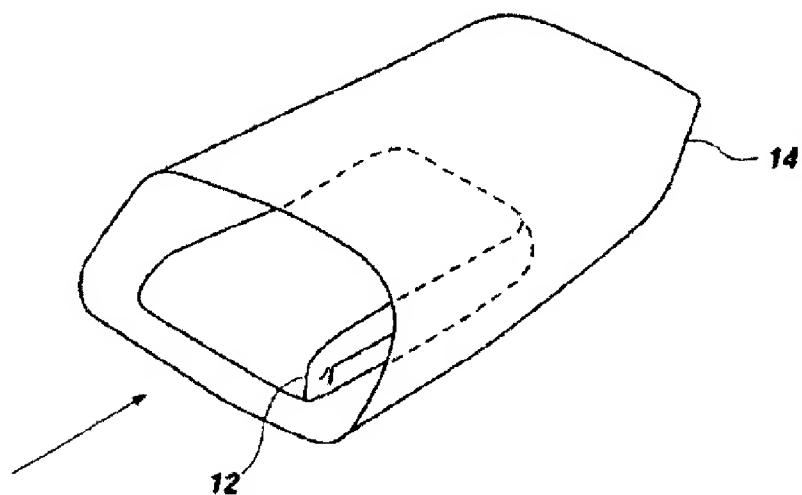
(62) Division of application No. 10/665,169, filed on Sep. 18, 2003.

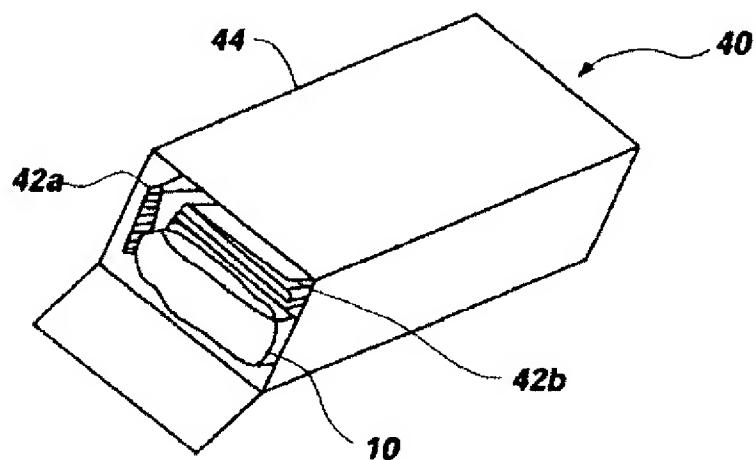
A diaper kit includes a vacuum-packed diaper disposed within a container. The container further includes therein at least one diaper accessory. The container may have a rectangular or cylindrical configuration and may comprise a box or a bag.



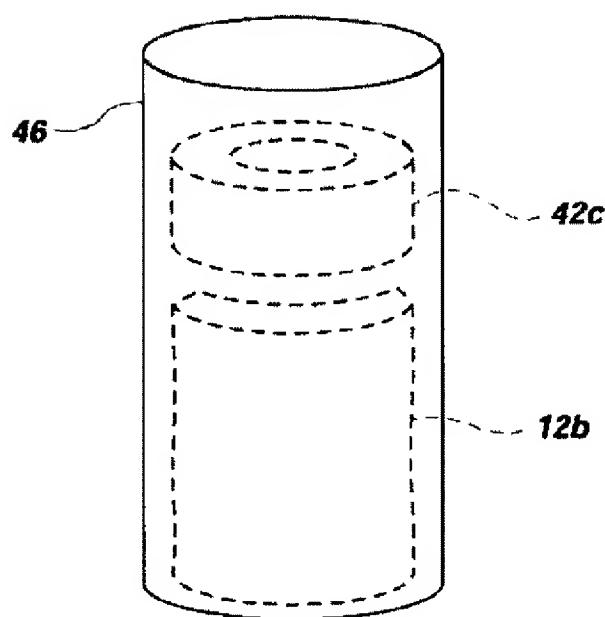
**FIG. 1A****FIG. 1B****FIG. 2A****FIG. 2B**

**FIG. 3A****FIG. 3B****FIG. 3C**

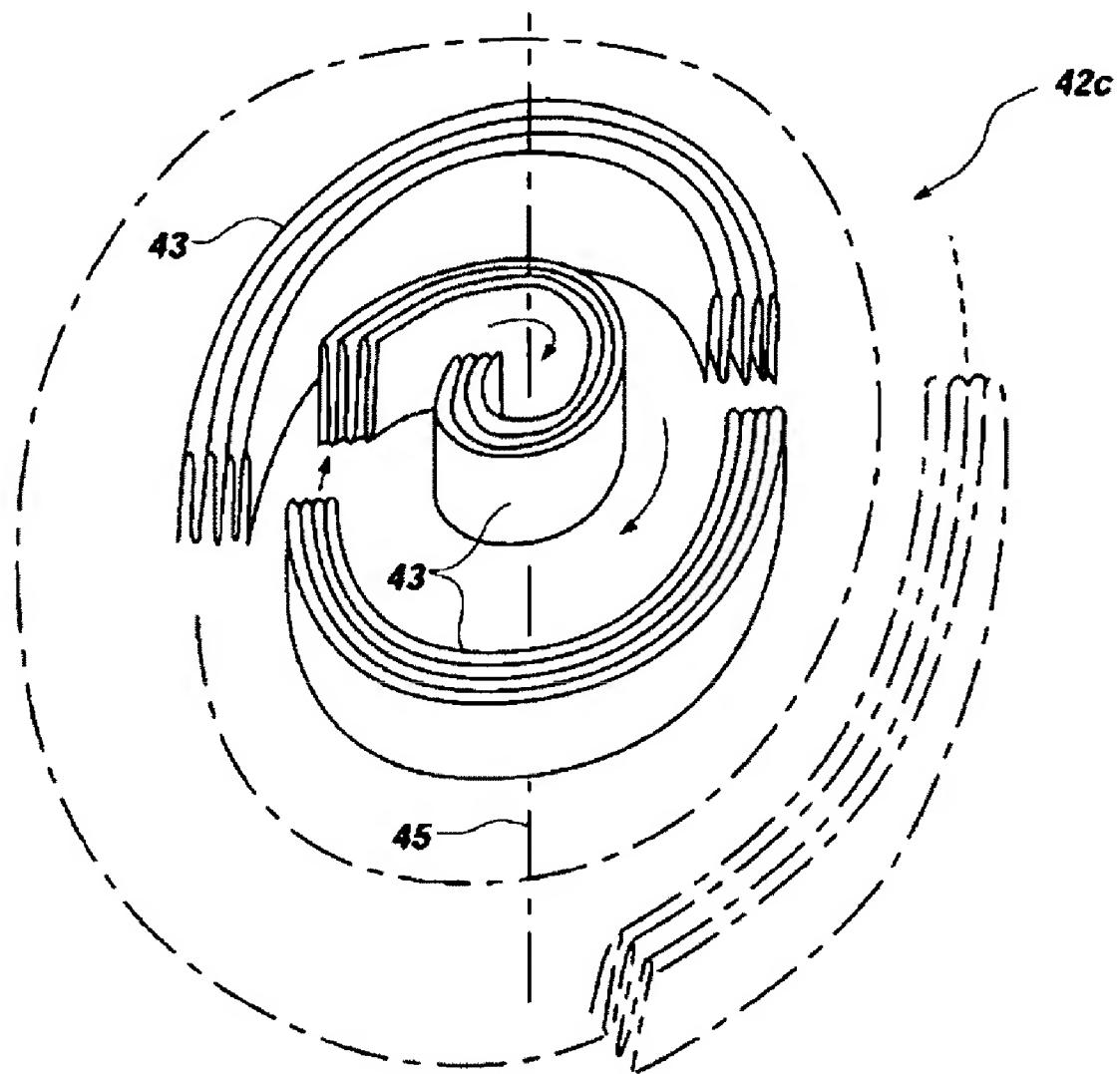




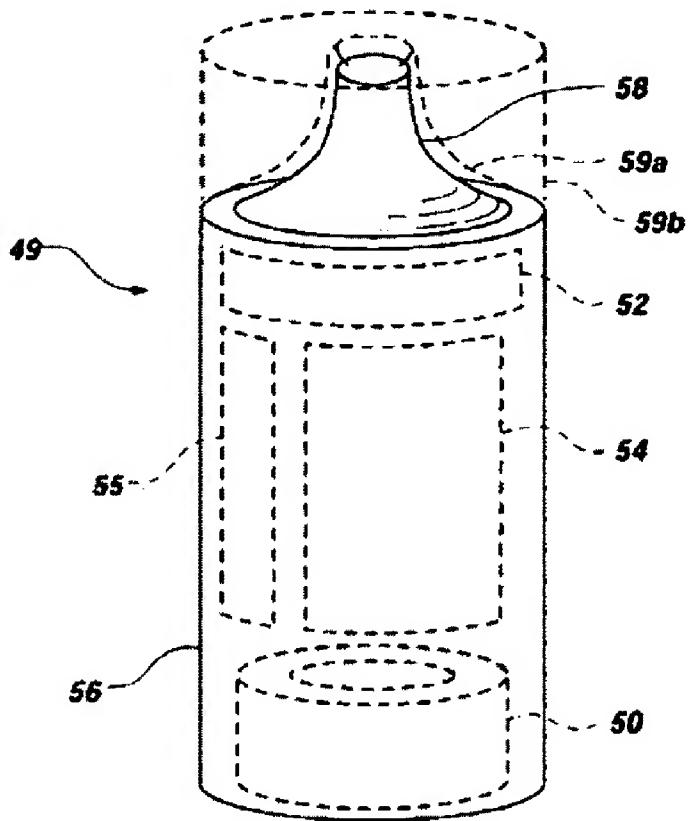
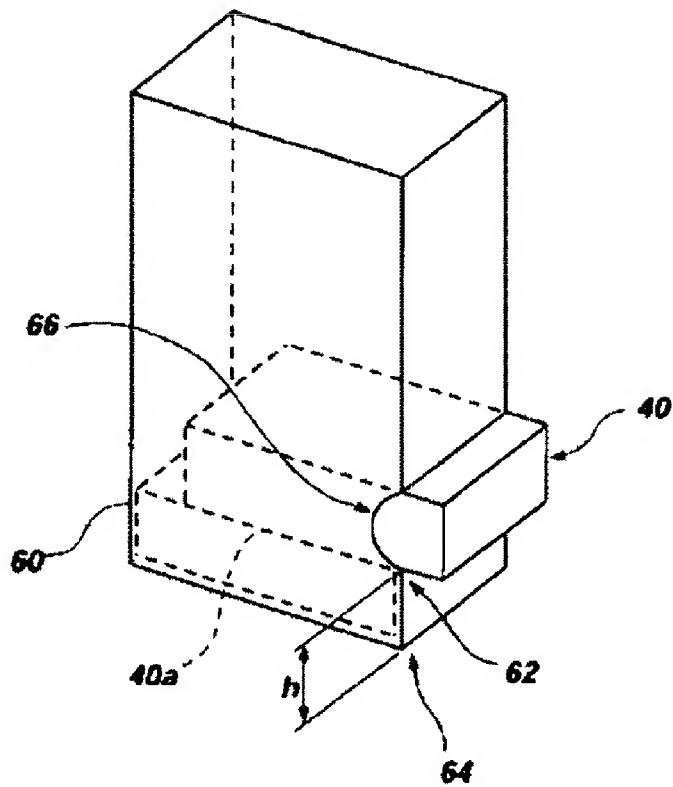
**FIG. 5**

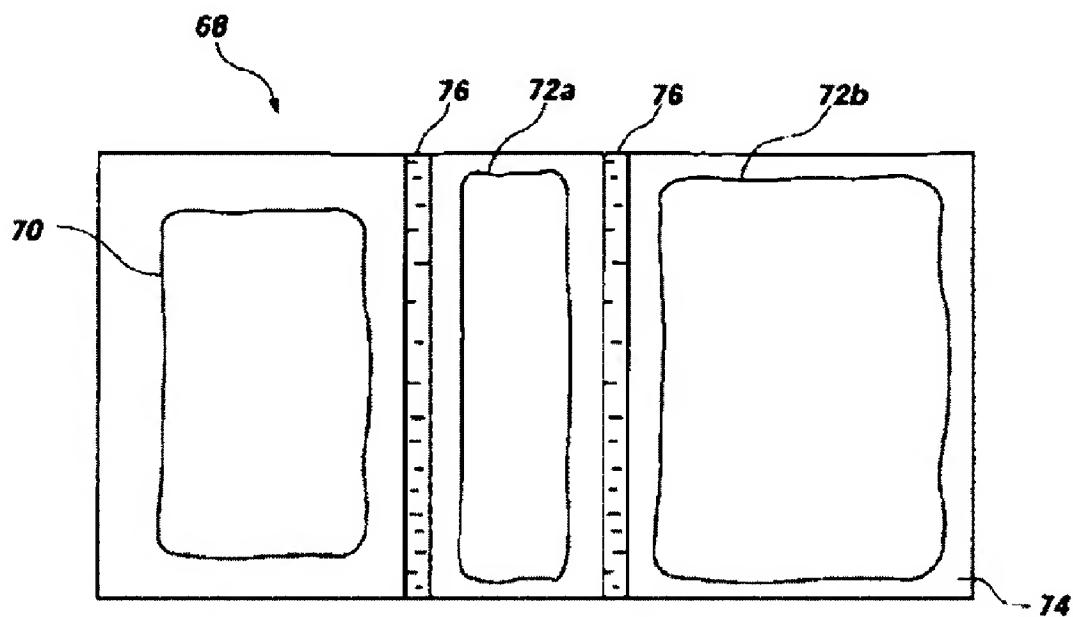
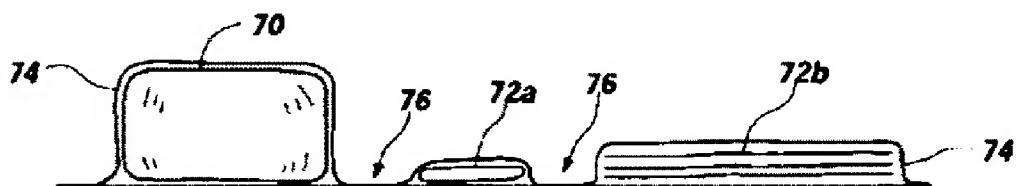
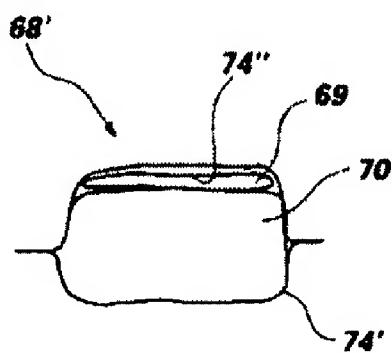


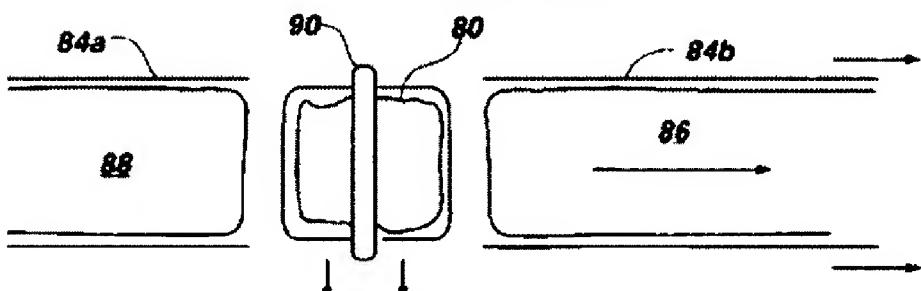
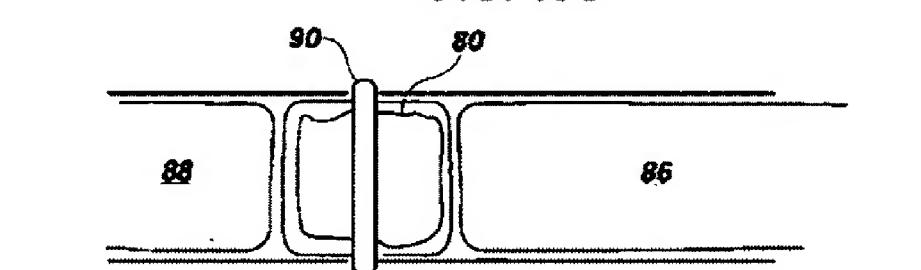
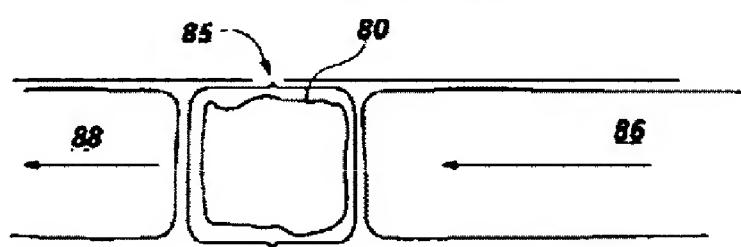
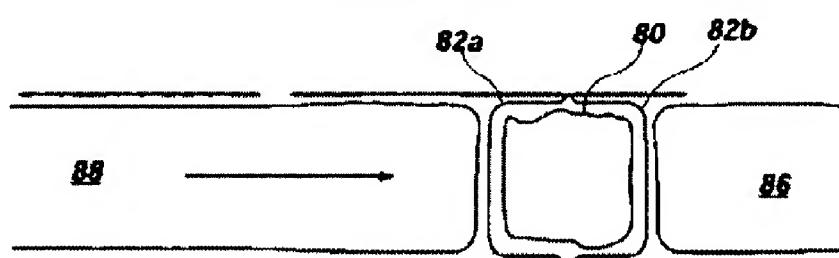
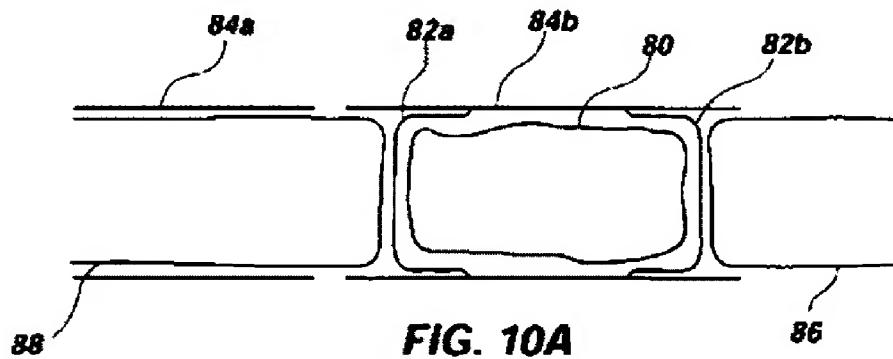
**FIG. 6**

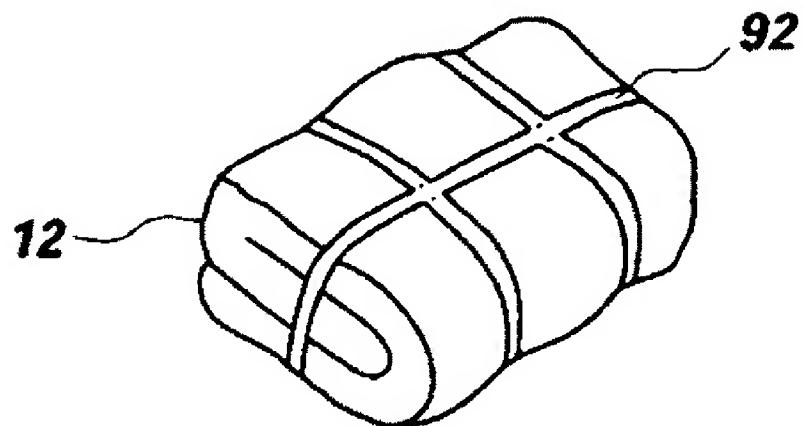


**FIG. 6A**

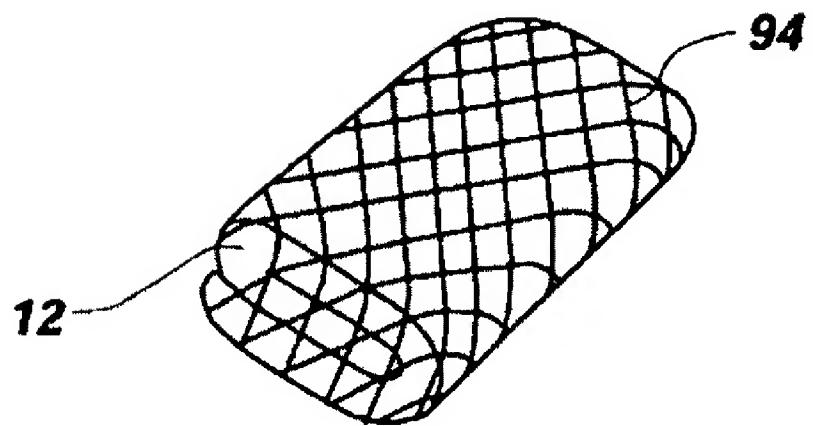
**FIG. 7****FIG. 8**

**FIG. 9A****FIG. 9B****FIG. 9C**





**FIG. 11A**



**FIG. 11B**

**VACUUM-PACKED DIAPER KIT****CROSS-REFERENCE TO RELATED APPLICATIONS**

**[0001]** This application is a divisional patent application of and claims priority to U.S. patent application No. 10/665, 169, filed Sep. 18, 2003, which is hereby incorporated herein by reference, and which application is a nonprovisional of and claims priority to U.S. Provisional Patent Application No. 60/451,433, filed Mar. 4, 2003, which is hereby incorporated herein by reference.

**BACKGROUND**

**[0002]** The present invention relates generally to disposable packaged diapers and related infant and incontinent adult care accessories. More particularly, the present invention relates to a reduced size packaged diaper, and related infant and incontinent adult care accessories and kits.

**[0003]** Diapers are generally a necessity for very young children and incontinent adults. Individuals incapable of controlling the release of bodily waste in a manner sufficiently reliable to enable the use of restroom facilities, and those caring for such individuals, typically need to carry extra disposable diapers and changing accessories. This is typically because it is difficult to predict when a diaper worn by an individual may need to be changed. Caretakers of babies and others requiring diapers often carry spare, clean diapers for this reason.

**[0004]** Many of the following discussions and examples are directed to use of diapers in infant care. However, it will be apparent that many of the same considerations apply to use of diapers for non-infant, incontinent persons.

**[0005]** Storage and carriage of clean diapers is often inconvenient. For instance, disposable diapers are generally rather bulky items not given to easy storage or carriage in a purse, pocket, or otherwise about the person. In addition, the problem can be exacerbated in that diapers can be subject to expansion from the typically somewhat compressed state in which they are normally provided to consumers, especially in circumstances where the diapers are subject to contact with other items within a storage bag. For example, many disposable diapers are provided in a bi-fold configuration meant to minimize the space taken in storing the diaper. However, after being removed from their original packaging, bi-fold diapers often unfold or otherwise expand to consume an even larger storage space. Thus, disposable diapers can become more bulky and difficult to carry than when in their nominal, packaged condition.

**[0006]** In addition, it is often the case that it is not sufficient to simply change a soiled diaper and replace it with a clean diaper. For instance, cleaning of the individual who wore the diaper may need to be performed with diaper accessories, such as moist wipes. Also, it may be necessary to apply ointment or powder to the individual wearing the diaper to treat or prevent incidents of diaper rash or other skin conditions. Due to these considerations, caretakers of individuals requiring diapers often carry clean diapers and diaper changing accessories in a dedicated container, is often referred to as a "diaper bag." By doing so, when it becomes necessary to change a diaper, all of the materials needed by the caretaker are available in one location.

**[0007]** While a conventional diaper bag provides a dedicated container in which diapers and diaper accessories can be stored and carried, the requirement of carriage of a diaper bag often adds to the difficulty of a caretaker's responsibility. For example, parents of young children often must carry a purse or briefcase for the parent's own needs. In addition to this, the parent may need to carry the young child; and, of course, the child's diaper bag. This can leave the parent with no free hands for other tasks.

**[0008]** While conventional clean diapers and diaper changing accessories can be stored and carried in other carrying containers such as purses, backpacks, briefcases, etc., the bulky nature of conventional disposable diapers results in the diapers occupying a relatively large space within the carrying container. In addition, diaper changing accessories such as moist wipes, ointment, powder, etc., add to the space consumed by conventional clean diapers and can be difficult to locate among other items stored in the backpack, purse, case, or the like.

**[0009]** Where the diapers being carried by the caretaker are for bottle feeding infants, the problems discussed above are further exacerbated by the need to carry materials for feeding the baby. In addition to the accoutrement necessary to attending to changing the baby's diaper, things such as bottles, nipples, containers of formula or milk, etc., generally must also be carried.

**SUMMARY OF THE INVENTION**

**[0010]** It has been recognized that it would be advantageous to develop a packaged diaper that requires a relatively small amount of storage space. In addition, it has been recognized that it would be advantageous to develop a diaper and related accessory kit that consumes a relatively small amount of space while providing substantially all of the materials necessary to change an individual's diaper. It has also been recognized that it would be advantageous to develop an infant care kit that consumes a relatively small amount of space while providing substantially all of the materials necessary to feed the infant and change the infant's diaper.

**[0011]** The invention provides a packaged diaper, including a diaper, having a first, nominal size, and a second, reduced size, the reduced size of the diaper being convenient for carriage and storage of the diaper. An encasement can also be provided, in which the diaper can be disposed in the second, reduced size. The encasement can confine the diaper so that the diaper is retained in its reduced size by the encasement and so that the diaper is returned to its nominal size upon opening of the encasement.

**[0012]** In accordance with another aspect of the invention, a packaged diaper is provided, including a diaper, having a first, nominal configuration characterized by a nominal length, width and height, and a second, reduced configuration characterized by a second, reduced length, width and height. The reduced length can be between about 2 inches to about 4 inches, the reduced width can be between about 1.0 inch to about 2.5 inches, and the reduced thickness can be between about 0.5 inches to about 1.5 inches. An encasement can also be provided, in which the diaper can be disposed and retained in the second, reduced configuration.

**[0013]** In accordance with another aspect of the invention, a packaged diaper is provided, including a diaper, having a

first, nominal size and shape, and a reduced, substantially cylindrical size and shape. The reduced, substantially cylindrical shape can have a diameter between about 0.5 inches to about 1.5 inches and a length between about 2 inches to about 4 inches. An encasement can also be provided, in which the diaper can be disposed and retained in the reduced, substantially cylindrical shape.

[0014] In accordance with another aspect of the invention, a packaged diaper is provided, including a diaper having a first, nominal volumetric configuration characterized by a nominal length and width of the diaper, and a second, reduced volumetric configuration characterized by a reduced length and width of the diaper. An encasement can also be provided, the encasement formed of a substantially air impermeable material. The diaper can be disposed in the encasement in the second, reduced volumetric configuration and the encasement can be at least partially evacuated of air so as to contain the diaper in at least a partial vacuum state. Differential pressure within and without the encasement can maintain the second, reduced volumetric configuration of the diaper and the encasement can be sealed to confine the diaper so that the diaper is returned to its nominal volumetric configuration upon opening of the encasement.

[0015] In accordance with another aspect of the invention, a method of packaging a diaper is provided and includes the steps of: a) folding the diaper at least once along both a lengthwise and a crosswise aspect of the diaper; b) disposing the folded diaper within an encasement comprised of a substantially air impermeable material; c) evacuating air from the encasement and the folded diaper; and d) sealing the encasement to maintain a vacuum created within the encasement and the folded diaper.

[0016] In accordance with another aspect of the invention, a method of packaging a diaper is provided and includes the steps of: a) volumetrically reducing a size of the diaper to a size convenient for carriage and storage of the diaper; b) disposing the volumetrically reduced diaper within an encasement; and c) maintaining the volumetrically reduced size of the diaper with the encasement.

[0017] In a more detailed aspect, the encasement can facilitate this by virtue of its hoop strength and/or by means of a pressure differential acting upon the encasement.

[0018] In accordance with another aspect of the invention, a diaper changing kit is provided and includes a packaged diaper in accordance with one or more previously set forth aspects of the invention, at least one diaper accessory, and a container in which the packaged diaper and the diaper accessory can be disposed. In a more detailed aspect, the accessory can be one or more of: a) a moistened wipe; b) baby powder; c) a medicament; d) a swab; e) a lotion; and, a disposal bag for a dirty diaper. In another more detailed aspect the container can be configured to have a first, oversized size and shape and a second smaller size and shape, and to also function as a disposal container for a dirty diaper.

[0019] In accordance with another aspect of the invention, an infant care kit is provided and includes a diaper, a diaper accessory, a portion of infant food and an infant feeding assembly. The infant feeding assembly can have a hollow body and a nipple portion couplable thereto. The diaper, diaper accessory, and portion of infant food can each be

disposed in the infant feeding assembly. The infant feeding assembly can be configured to: i) contain each of the diaper, at least one diaper accessory and at least one portion of infant food; and ii) upon removal of the diaper and diaper accessory, receive the portion of infant food within the hollow body and deliver the infant food to an infant with the food delivery device. In a more detailed aspect a warming pack can also be provided for warming the infant food.

[0020] In accordance with another aspect of the invention, a packaged diaper is provided and includes a diaper, having a first, nominal size, and a second, reduced size, the reduced size of the diaper being convenient for carriage and storage of the diaper. A restraint can also be provided, in which the diaper can be disposed in the second, reduced size. The restraint can confine the diaper so that the diaper is retained in its reduced size by the restraint and so that the diaper is returned to its nominal size upon opening of the restraint.

[0021] In accordance with another aspect of the invention, a packaged diaper is provided and includes a densified diaper being reduced to a second, reduced density from a first, nominal density. The reduced density of the diaper can be densified in at least two dimensional directions relative to the nominal density. An encasement can also be provided in which the diaper can be disposed in second, reduced density. The encasement can confine the diaper so that the diaper is retained in the reduced density by the encasement.

[0022] In accordance with another aspect of the invention, an expandable diaper is provided and includes a diaper being reduced to a second, reduced size from a first, nominal size, the reduced size of the diaper being reduced in at least two dimensional directions relative to the nominal size. An encasement can also be provided in which the diaper can be disposed in the second, reduced size. The encasement can confine the diaper so that the diaper is retained in the reduced size by virtue of the encasement.

[0023] In accordance with another aspect of the invention, a packaged diaper is provided and includes a diaper, having a first, nominal size, and a second, reduced size, the reduced size of the diaper being convenient for carriage and storage of the diaper. A restraint can also be provided in which the diaper can be disposed in the second, reduced size. The restraint can confine the diaper so that the diaper is retained in its reduced size by the restraint and so that the diaper is returned to its nominal size upon opening of the restraint.

[0024] Additional features and advantages of the invention will be apparent from the detailed description which follows, taken in conjunction with the accompanying drawings, which together illustrate, by way of example, features of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0025] FIG. 1A is a top view of a diaper in a nominal configuration in accordance with an embodiment of the present invention;

[0026] FIG. 1B is a side view of the diaper of FIG. 1A;

[0027] FIG. 2A is a top view of a diaper in a volumetrically reduced configuration in accordance with an embodiment of the present invention;

[0028] FIG. 2B is a side view of the diaper of FIG. 2A;

[0029] FIG. 3A is a perspective view of a diaper in accordance with an embodiment of the invention;

[0030] FIG. 3B is a perspective view of the diaper of FIG. 3A in the process of folding the diaper along a lengthwise aspect of the diaper;

[0031] FIG. 3C is a perspective view of the diaper of FIG. 3B in the process of folding the diaper along a crosswise aspect of the diaper;

[0032] FIG. 3D is a perspective view of the diaper of FIG. 3C being disposed within an encasement;

[0033] FIG. 3E is a perspective view of the diaper of FIG. 3D held under vacuum within the encasement of FIG. 3D;

[0034] FIG. 4 is an end view of a packaged diaper having a reduced volume in a substantially cylindrical shape in accordance with one aspect of the invention;

[0035] FIG. 5 is a perspective view of a diaper kit in accordance with one aspect of the invention;

[0036] FIG. 6 is a perspective view of another diaper kit in accordance with one aspect of the invention;

[0037] FIG. 6A is a perspective view of a diaper wipe configuration usable with the kit of FIG. 6 in one example in accordance with one aspect of the invention;

[0038] FIG. 7 is a perspective view of an infant care kit in accordance with one aspect of the invention;

[0039] FIG. 8 is a perspective view of a master container in accordance with one aspect of the invention;

[0040] FIG. 9A is a top view of another diaper kit in accordance with one aspect of the invention;

[0041] FIG. 9B is a side view of the diaper kit of FIG. 9A;

[0042] FIG. 9C is a side view of another example diaper kit in accordance with one aspect of the invention;

[0043] FIG. 10A is schematic view of a one step of a process of packaging a diaper in accordance with one aspect of the invention;

[0044] FIG. 10B is schematic view of another step of the process of FIG. 10A;

[0045] FIG. 10C is schematic view of another step of the process of FIG. 10A;

[0046] FIG. 10D is schematic view of another step of the process of FIG. 10A;

[0047] FIG. 10E is schematic view of another step of the process of FIG. 10A;

[0048] FIG. 11A is a perspective view of a diaper held by a restraint in accordance with one aspect of the invention; and

[0049] FIG. 11B is a perspective view of a diaper held by another restraint in accordance with one aspect of the invention.

#### DETAILED DESCRIPTION

[0050] Reference will now be made to the exemplary embodiments illustrated in the drawings, and specific language will be used herein to describe the same. It will nevertheless be understood that no limitation of the scope of

the invention is thereby intended. Alterations and further modifications of the inventive features illustrated herein, and additional applications of the principles of the inventions as illustrated herein, which would occur to one skilled in the relevant art and having possession of this disclosure, are to be considered within the scope of the invention.

[0051] As illustrated in FIGS. 1A through 2B, an exemplary packaged, disposable, diaper 10 is sized and shaped to consume a considerably smaller volume and be more conveniently shaped than conventional disposable diapers. As illustrated, the packaged diaper 10 begins as a diaper 12 nominally sized and shaped in accordance with conventional diapers. The diaper can be one of a variety of types known to those in the art, and can be formed of a variety of materials. The diaper can be disposable or non-disposable (i.e., resusable).

[0052] As shown in FIG. 1A, the diaper begins with a first, nominal volumetric configuration characterized by a nominal length L and nominal width W of the diaper. As used herein, the term "nominal" is understood to mean to be the normal, post manufacturing state in which it is ready to be unfolded and worn, in reference to the various dimensions of the diaper. Thus, the diaper 12 can have a first size having a height, width and length of nominal size, such as conventionally provided to consumers. While not so required, the diaper 12 can include upper 12a and lower 12b portions, which can correspond to a front and back of the diaper. Many conventional diapers are provided with a front and back portion of different configuration.

[0053] As shown in FIGS. 2A and 2B, an example of a packaged diaper 10, after being prepared in accordance with the description to follow below, includes a diaper 12 having a second, reduced volumetric configuration characterized by a reduced length L.sub.2 and width W.sub.2 of the diaper 12. The reduced volumetric configuration can differ from the nominal volumetric configuration in width, height, thickness, volume and overall size. As will be appreciated from the figures, not only is the volume of the packaged diaper reduced overall, but in the example embodiment at least two of the: 1) length; 2) width; and, 3) height, can also be reduced. Thus, the diaper can be reduced in volumetric configuration to consume much less space than the diaper consumes when in the nominal configuration.

[0054] As mentioned, the diaper 12 can be disposed in an encasement 14, which can be formed of a substantially air impermeable material. By disposing the diaper in the encasement in the second, reduced volumetric configuration, a packaged diaper is provided that consumes much less space than the when in its nominal configuration. By "substantially air impermeable," what is meant is that the permeability is low enough that the product has a reasonable shelf life without significant expansion.

[0055] As an example, it has been found that by drawing a vacuum down to about 5 Mbar at room temperature and pressure at a location about 5,000 feet elevation above mean sea level, the volume of the diaper can be reduced to as little as  $\frac{1}{3}$  or  $\frac{1}{4}$  that of the nominal volume. Similar results are to be expected at locations of different elevation. However, as is known, at lower elevations a greater vacuum can be drawn to allow for subsequent transportation of the packaged product to higher elevations. For example, vacuum packaging using a vacuum down to 1 or 2 Mbar is common at lower

elevations. Thus, in the space required to store one conventional diaper, three, four, or more, diapers packaged in accordance with the invention can be stored. The reduced volume packaged diapers are not only advantageous in reducing storage space, the space required for packaging, shipping, etc., is also reduced, leading to considerable cost savings in associated processes.

[0056] While the reduced volume configuration can be created and maintained in a number of ways, in the embodiment shown in **FIGS. 2A and 2B**, the packaged diaper **10** includes encasement **14**, which can encompass the reduced volume diaper. Once the diaper **12** is disposed within the encasement, the encasement can be at least partially evacuated of air so as to contain the diaper in at least a partial vacuum state. The evacuation of air from within the diaper and encasement can be done in a number of ways, such as by conventional vacuum-packing methods.

[0057] Upon evacuation of air from the encasement, the encasement can be sealed, for example at an edge portion **16** to maintain the vacuum within the encasement and diaper **12**. In this manner a differential pressure can be created within and without the encasement to maintain the second, reduced volumetric configuration of the diaper. While the encasement is shown in **FIG. 2B** as sealed at an edge portion **16**, it will be understood that the encasement can be sealed conventionally in a variety of ways in a variety of locations.

[0058] As the encasement **14** configured to confine the diaper **12** is unsealed, the diaper is able to return to its nominal volumetric configuration. That is, user can cut, tear, remove a portion of the encasement, or otherwise break the airtight seal of the encasement; after which, the diaper **12** will no longer be subject to confining force due to the encasement and/or a pressure differential. Unopposed rebound forces in the materials from which the diaper is made will tend to return it to its nominal configuration. The encasement can include a means to facilitate opening, such as a notch or another intentionally formed discontinuity (not shown) provided in the encasement to aid in opening the encasement. In one embodiment a tear-away band, or the like, provided with a grasping tab (not shown) can be provided to facilitate opening by rupturing the encasement as it is pulled away therefrom. One of many other well known ways to provide a more easily broken-open encasement can be used to facilitate opening the packaging.

[0059] As described in further detail below, the reduced volumetric configuration can be achieved in a number of ways, and in the embodiment shown in **FIGS. 2A and 2B**, the volumetrically reduced configuration is created by foldingly reducing a length and width of the diaper **12**; increasing its thickness. The folded diaper is then vacuum-packed to reduce its thickness (as well as its width and length to a lesser extent). As used herein, the term "foldedly reduced" is meant to indicate the case wherein a diaper is folded or rolled over or under itself to thereby reduce a dimension of the diaper.

[0060] While the final size of the reduced volume diaper can vary, in one aspect of the invention, the reduced length and width can each be less than about  $\frac{1}{2}$  of the nominal length and width, respectively, of the diaper. In another aspect of the invention, the foldedly reduced length of the diaper can be less than about  $\frac{1}{3}$  and/or  $\frac{1}{4}$  of the nominal length of the diaper. In this manner, as shown by comparing

**FIGS. 1A and 1B** with **FIGS. 2A and 2B**, the overall width and length of the diaper can be substantially reduced. While a height dimension, corresponding to thickness, may be increased, it is not increased to exceed the width or the length of the diaper. This results in a more convenient and compact size overall.

[0061] The inventor has found that a conventional size 6 diaper can be reduced in size and volume from a nominal size of approximately 9" long by 4.5" wide by 0.25" to 1" in height/thickness (depending on expansion after removal from conventional packaging) to a reduced size of approximately 3.5" long by 2.25" wide by 1" in height. In the embodiment shown in **FIGS. 2A and 2B**, the packaged diaper **10** can include a reduced volumetric shape configuration which comprises a substantially rectangular shape, although other shapes are contemplated as well, as discussed in further detail below. In this manner, the packaged diaper can be easily carried, handled and stored within a purse, pocket, bag or other place or containment for carriage.

[0062] The packaged diaper in a densified state can thus be made pocket sized, or pocketable. As used herein that means that it is conveniently sized for carriage, for example about the size of a conventional cigarette package or smaller. One way to characterize this is that two of the three dimensions of height width and length, when added together, are less than 10 cm, and the greatest of the three does not exceed 10 centimeters. That said, all pocket sized items may not strictly fit this definition, but it is a definite guide in understanding what is meant by the term as used herein.

[0063] It will be appreciated that in this example the present invention provides a compact, efficiently sized packaged diaper that requires substantially less space than conventionally packaged diapers. The present invention can be advantageously utilized by a variety of persons, including incontinent minors and adults, and caretakers of individuals requiring diapers.

[0064] For example, parents of young children will benefit from the invention in that one or more diapers **10** can be easily stored in a pocket, or within a purse, briefcase, backpack or other storage bag and consume relatively little space. Similar benefits can be obtained with regard to incontinent adults, as adult diapers are generally even more bulky and difficult to store and carry than are smaller, children's diapers. Also, incontinent adults who may be otherwise embarrassed by having to carry spare clean diapers will likely find the packaged diapers in accordance with the invention to be much more discretely transportable, and therefore the carriage of such spare diapers much less noticeable by others.

[0065] In addition, in one aspect of the invention a packaged, pocketable diaper is provided and can include an encasement configured to encase and confine a diaper disposed therein. A diaper can be disposed within the encasement to be confined by the encasement in a size that is volumetrically reduced relative to a nominal size of the diaper. The volumetrically reduced size of the diaper is characterized in that the diaper is pocketable upon a person of an individual. As used herein, the term "pocketable" is to be understood to indicate a configuration of the diaper in which the diaper can be easily placed within and removed from a pocket of an item of clothing or accessories worn or carried by individuals. For example, the pocketable diaper

can be held within a shirt, jacket or pants pocket or stored or carried in a handbag, purse or briefcase, etc., and can be substantially undetectable by other individuals. In this manner, an incontinent adult can carry the pocketable diaper without worrying that others will be aware that the diaper is being carried. Also, an adult caretaker of an infant can carry a diaper for the infant in a manner that does not detract from a physical appearance of the adult and does not require additional baggage.

[0066] Similarly, in one embodiment of the invention, a packaged diaper is provided and can include a densified diaper being reduced to a second, reduced density from a first, nominal density. The reduced density of the diaper can be densified in at least two dimensional directions relative to the nominal density. An encasement can also be included and the diaper can be disposed in the encasement in the second, reduced density. The encasement can thereby confine the diaper so that the diaper is retained in the reduced density by the encasement. The two dimensional directions can include a width and thickness of the diaper, a width and length, a diameter and length, etc. In this manner, a reduced sized, space efficient densified diaper is provided that can be easily stored and carried by an individual in a discrete manner. Upon opening of the encasement the diaper expands to its nominal density, typically a greatly expanded size, and can then be used in the same manner as conventionally packaged diapers.

[0067] As used herein, the term "encasement" is to be understood to encompass a broad range of materials and configurations for containing or restraining or enclosing a volumetrically reduced diaper. For example, the encasement may completely encompass a diaper and hold the diaper under a vacuum seal or other pressure differential. In addition, the encasement may only partially encompass the diaper to maintain the compressed state of the diaper. Moreover, it is intended to be understood herein to be synonymous with restraint (as discussed below) or enclosure, or containment, in this context. The salient point being that it constrains, by some means, the densified diaper from expanding. Other encasements besides the examples shown can also be utilized, as would occur to one skilled in the art.

[0068] Shown in series in **FIGS. 3A through 3E** is one aspect of the invention in which a diaper is reduced from its nominal volume or size to a reduced volume or size. Diaper 12 begins with a nominal volumetric configuration, sized and shaped as may be conventionally provided by a manufacturer of the diaper. In this embodiment, the diaper is reduced in volume by fold 17 along a lengthwise aspect of the diaper, shown at line 18. In **FIG. 3C**, the diaper 12 is folded at 19 along a crosswise aspect of the diaper, shown at line 20. Progressing to **FIG. 3D**, once the diaper has been folded a desired number of times; the folded diaper is disposed within encasement 14, which is formed of a substantially air impermeable material. Encasement 14 can then be evacuated to form a relative vacuum within the encasement, after which the encasement can be sealed to maintain the vacuum in the diaper and the encasement.

[0069] It will be understood by those skilled in the art that the process of forming a vacuum within the diaper and the encasement will extract at least a portion of air contained within the diaper. By removing a majority of excess air from the diaper, the diaper can be compressed upon itself by

atmospheric pressure and consume a reduced amount of space corresponding to the amount and volume of air removed from the diaper.

[0070] In addition to the process illustrated in **FIGS. 3A through 3E**, in another aspect of the invention, a method of packaging a diaper is provided and includes the steps of volumetrically reducing a size of the diaper to a size convenient for carriage and storage of the diaper. The volumetrically reduced diaper can then be disposed within an encasement. The volumetrically reduced, convenient size of the diaper can be maintained by a pressure differential acting upon the encasement. As used herein, the term "convenient size" is understood to refer to a size and configuration of a diaper that can be easily and conveniently stored in a pocket, handbag, purse, etc., and consume very little space within the pocket, handbag, etc. Such a size will be appreciated to be essentially a "pelletized" or "capsulated" or "pocket sized" or "pocketable" (as defined above) version of the diaper, having bulk due to air spaces removed, and will be generally cylindrical, rectangular, etc, and can have rounded or square corners. Generally, the largest dimension will be about four inches or less. However, for certain specialized applications such as kits contained in a feeding bottle, a longer, more "sticklike" shape may be used in one embodiment. But likewise a cylindrical or square configuration having height, width, and length dimensions of roughly equal magnitude can also be advantageous in such a kit in another embodiment. The salient point is that the size is convenient to carry and conceal.

[0071] The size of the diaper can be volumetrically reduced in a number of manners, including pressing the diaper into a mold or other cavity. In this example, the encasement in which the diaper is disposed can be sized and shaped to correspond closely to the volumetrically reduced size of the diaper. Once disposed within the encasement, the force applied to compress the diaper into the mold can be released, after which the diaper will tend to return to its nominal size and shape, but will be restrained by the encasement. The pressure differential acting upon the encasement will thus be the result of the diaper tending to expand into its nominal configuration. An equilibrium will be reached between a) the restoring force tending to expand the diaper; and b) a combination of the hoop strength (resistance to expansion of the encasement via deformation of the encasement) and the pressure differential tending to compress the diaper. Depending on the material from which the encasement is made, this can be made to be predominantly hoop strength or predominantly air pressure differential.

[0072] While the example packaged diaper shown in many of the figures of this disclosure includes a generally rectangular shape, it is contemplated that the volumetrically reduced diaper can be of a variety of sizes and shapes. For instance, as shown in **FIG. 4**, volumetrically reduced diaper 12a can have a substantially cylindrical shape. This embodiment may be beneficial, for example, in applications in which the diaper is to be stored in rounded or cylindrical receptacles, such as cans or tubes. As will be appreciated, by forming encasement 14a from a flexible, substantially air impermeable material, a vacuum formed within the encasement will force the encasement to conform to the general shape of the reduced volume diaper. In this manner, the diaper can be formed in a variety of reduced volume shapes for a variety of applications.

[0073] In another example embodiment the encasement shape can control the shape of the packaged diaper. For example, a diaper can be compressed into an encasement within a mold cavity which encasement has a shape which essentially follows the shape of the mold. Thereafter the encasement maintains that shape, though the diaper may expand slightly against the hoop strength, air pressure differential, or combination thereof.

[0074] As illustrated in FIG. 5, in another aspect of the present invention a diaper kit 40 is provided. The kit can include a packaged diaper 10 in accordance with the embodiments discussed above and at least one diaper accessory 42. A container 44 is also provided, in which each of the packaged diaper and the diaper accessory are disposed. The diaper accessory can be a variety of items, including, but not limited to, a diaper rash ointment or other medicament, talcum powder/baby powder, a lotion, moist or dry wipes, cotton swabs, dirty diaper disposal bag, etc., as may be needed in caring for an infant or incontinent person, as will be known to one skilled in the art of providing products for care of such persons. In the example embodiment shown, a packet of ointment 42A is included in the kit, as are moist wipes 42B.

[0075] Thus, in one example, substantially all of the materials necessary for changing a soiled diaper are provided in a small, space optimized kit that can be easily carried or stored by a caretaker of an individual requiring diapers. The kit can be advantageously used as a daily staple of caretakers, or may be used in specialized circumstances such as outdoor activities, travel, or business or recreational events away from home, or other situations in which space and convenience of carriage may be of a premium. In such circumstances the caretaker may wish to minimize the number of articles needing carriage, and can advantageously carry one or two kits, as may be needed, and dispense with the conventional diaper bag that would otherwise have to be carried during the event or activity. Also, the reduced size of the present diaper kit can allow one or more kits to be stored in an out-of-the-way location, such as a glove box of a car, and retrieved in "emergency" situations in which spare diapers were forgotten or consumed.

[0076] In another embodiment, the kit can be configured for use by an incontinent adolescent or adult. The kit can further include supplies to touchup stains on clothing. It can contain a small container of perfume or cologne, a small container of odor reducing spray, or other items which an incontinent adult may find needful and reassuring to carry, in addition to supplies which customarily may be needed to change a diaper, including a clean diaper, wipes, and lotion, ointment or other medicament, to name some examples.

[0077] As shown in FIG. 5, the diaper kit 40 can include a container 44 that is substantially rectangular in shape. Such kits can be easily stacked and stored and will fit neatly into a pocket, purse or other baggage. In another embodiment, as shown in FIG. 6, the container 46 can be substantially cylindrical in shape. In this embodiment, the diaper 12b can be formed in a cylindrical shape, or other shape to facilitate maximum use of available space within the cylindrical container. Also included in the illustrated example shown in FIG. 6 are moist wipes 42C which can be arranged in a disk-like or toroidal configuration for disposal within the cylindrical container. With reference to FIG. 6A, the indi-

vidual wipes 43 are accordion folded, then rolled about an axis 45 transverse to the folds. A surprisingly large number of wipes thus configured can be fit into a surprisingly small space. In this manner, 6 or 7 wipes or another selected number of wipes can be stored within the container 46 to ensure ample supply.

[0078] In another aspect of the invention, illustrated by example in FIG. 7, an infant care kit 49 can be provided which includes a diaper 50, one or more diaper accessories 52 and a portion of infant food 54. An infant feeding bottle assembly is also provided having a hollow body 56 and a nipple food delivery portion 58 of the device coupleable thereto. A cover 59a or 59b can be provided, which keeps the feeder portion sanitary. This can be a throwaway tear-off film cover (e.g. 59b) or a more conventional replaceable cap (e.g. 59a). The feeding apparatus can be single use (i.e., disposable) or reusable. As shown, the diaper, diaper accessory, and portion of infant food can be disposed within the infant feeding assembly for convenient carriage. The infant feeding assembly can thus be configured to: i) contain each of the diaper, diaper accessory and portion of infant food; and ii) upon removal of the diaper and diaper accessory, receive the portion of infant food (and water, if applicable) within the hollow body and thereby enable delivery of the infant food to an infant via a food delivery device erstwhile acting as a container for the kit. In one embodiment the nipple portion can be configured for delivery of baby formula, and in another embodiment it can be configured for delivery of a flowable baby food such as a formula/cereal mixture, creamed vegetables or fruit, or the like. In one embodiment the baby food can be in powder form, reconstituted by addition of water. A chemical warming pack (similar to or the same as a conventional hand warming pack) can be provided for use in warming the baby formula or other baby food.

[0079] In this example implementation, substantially all of the materials necessary to feed and change a diaper of an infant are provided in a compact, easily carried kit. A caretaker of the infant can use the kit to store the provided items, and when desiring to feed the infant, can prepare the portion of infant food and feed the infant with the infant feeding assembly, shown in this embodiment as similar to a conventional baby bottle, but provided with a detachable bottom.

[0080] As shown in the illustrated example, the hollow body 56 of the feeding assembly 49 can be substantially cylindrical in shape, although other shapes are also contemplated, such as squared, triangular, and other polyhedral cross-sectional shapes. The portion of infant food can include a variety of foods suitable for consumption by infants, including powdered baby formula and condensed baby formula, freeze dried, powdered, concentrated creamed vegetables and fruits and other baby foods, as well as cereal mixes, etc. A caretaker can easily remove all items from the feeding assembly, configure it for feeding, and returning the portion of infant food (with water, as mentioned, if necessary, or other fluid which can be added to the infant food) and the food can be fed to the infant via a food delivery device 58, a conventional baby bottle nipple in the illustrated embodiment.

[0081] In one embodiment, the feeding apparatus can include a double wall configuration to provide increased

insulation so as to keep formula or other baby food at a desired temperature for a longer period of time. To facilitate this, or, to provide initial warming when hot potable water is unavailable, a heat source 55, as mentioned, can also be disposed within the feeding assembly. The heat source can be configured to provide heat for warming the portion of infant food, as well as any fluid having been added to the infant food. In situations where it may be necessary to add cold fluid such as milk or water to the infant food, the fluid and food can be warmed to a temperature well tolerated and more acceptable to an infant. As mentioned, the heat source can be a conventional chemical heating apparatus, such as those producing an exothermic reaction when two or more separate materials are mixed, or are exposed to air. These can be packets of reactants in granular form, chemically activated gel heating sources, etc. The feeding apparatus can be configured to cooperate with the heat source to heat the baby formula or other food. In one embodiment, the kit can include an outer container (not shown) which is the outer wall of the double wall configuration mentioned. This can be a continuous wall, or can comprise vents (e.g. to expose air to air-reactant heating pads). A mesh or other textile can be used as the material forming the outer containment in which the infant feeding assembly is disposed. The outer container can be configured to receive and protect the feeding assembly and can also encompass the heating source to maintain close contact between the heating source and the hollow body 56.

[0082] In another embodiment, the heat source can be some other means of providing heat, for example provision of a metal outer sleeve, annular space for water, and inner container for formula or food enabling use of a cigarette lighter, a solar reflector or magnifier, or some other higher temperature heat source to heat the outer sleeve and still enable more gentle warming of the contents of the inner sleeve. Such an arrangement would also facilitate rapid cooling of the outer sleeve after removing the high temperature heat source so that it can be safely handled, enabling removal of the inner sleeve for feeding for example.

[0083] In another example embodiment of the invention, shown in FIG. 8, a plurality of single use packaged diapers (not shown), or diaper kits 40, 40A can be provided packaged together, each stacked vertically in a master container 60. The master container 60 can include a removable access panel (previously removed in FIG. 8) through which one 40 of the plurality of containers can be accessed. Providing for the removable access panel can be in one of a variety of ways known to those in the art, including a perforated removable panel or hinged panel. A bottom 62 of the access panel can be disposed in the master container 60 in a location vertically displaced from a bottom 64 of the master container by a distance substantially equal to a height "h" of the container. It has been found that having the last container to be used positioned below the access panel helps keep the shape of the master container and improves appearance over the dispensing life of the product.

[0084] In this manner, as a kit is removed from the master container, the kit immediately above the removed kit will fall into place to be easily removable from the master container. Notches 66 can be provided adjacent the removable panel to enable easy withdrawal of kits through the panel. The master container 60 can be used to package and ship a number of kits 40, and advantageously also used to

dispense the kits at a retail center or other point of sale. While the master container shown in FIG. 7 is configured to store and dispense 6 diaper kits, master containers configured to store and dispense fewer or more kits can also be provided, and include two or more access panels disposed and oriented in a variety of locations on the master container.

[0085] Illustrated in FIGS. 9A and 9B is a diaper kit 68 in accordance with another example implementation of the invention. In this embodiment, a diaper 70 and various diaper accessories 72 are contained within an encasement 74. The accessories can include baby ointment, baby wipes, powder, etc. as discussed above. In this example the accessories include baby ointment 72A and wipes 72B. Other accessories can be substituted or additionally included. Shown at 76 are seams formed in the encasement defining adjacent compartments that can each hold a different product. The seams can separate products to enable differing treatment of the products in relation to the encasement. For instance, diaper 70 can be disposed in the encasement in a reduced volumetric configuration, as discussed above, and the encasement can be evacuated and vacuum-sealed about the diaper. However, the baby ointment 72A can be vacuum sealed (if already packaged in an impermeable containment without excess air) but need not be vacuum sealed (indeed it may be difficult to do so if not already packaged) in its corresponding compartment. Likewise the wipes 72B are not vacuum packed, but could be if previously enclosed in an impermeable containment without excess air.

[0086] While it may be desirable to vacuum-pack the diaper 70, and it is possible to do so with some accessories, it may be the case that certain accessories are not well suited to such an arrangement. For instance, with regard to the previously mentioned examples of ointment 72A and wipes 72 not pre-packaged, baby wipes are often saturated or at least moisture-laden with a liquid cleaning compound similar in appearance to soapy water, to aid in the cleaning process associated with changing diapers. When subjected to a vacuum, the moisture may be withdrawn from the wipes, leading to poor performance of the wipes. In addition, if undue moisture is removed during the vacuum process, the moisture may interfere with sealing the encasement once vacuum has been drawn, leading to premature breach of the encasement. The same applies to the ointment, it would be likewise problematic to vacuum pack it, even more so. Thus, for some products a vacuum seal may not be desirable or necessary, and those products can be sealed in the encasement without being placed under vacuum.

[0087] To address these issues, the present invention in one embodiment advantageously provides a diaper kit that can include differently and variably treated compartments. In the example shown, the compartment containing the diaper 70 can be treated with a vacuum to aid in maintaining the volumetrically reduced configuration of the diaper. The compartment holding the ointment 72A may or may not be vacuum treated, as the situation dictates. The compartment holding the wipes 72B can be simply sealed to retain the moisture in the wipes without drawing any moisture out with a vacuum process. Other compartments (not shown) can be treated according to the product stored in each one.

[0088] In addition to the compartmentalized encasement shown in FIGS. 9A and 9B, it is contemplated that in another example embodiment of the invention, shown in

**FIG. 9C**, one can provide a diaper kit 68' in which all of the components of the kit are contained in an encasement 74' and sealed under vacuum. For example, the diaper wipes 69 and/or other accessories can be pre-packaged in one or more casings 74" with liquid and wipe material therein. In this way, both a diaper and one or more accessories, together forming a single use kit, can be integrally packaged in one encasement 71', and can all be accessed once the encasement has been breached.

**[0089]** With reference to **FIGS. 10A through 10E**, in one embodiment of the invention the encasement in which the volumetrically reduced diaper is disposed can contain the diaper without any substantial pressure differential acting upon the encasement. One illustrative process in which this can be achieved is illustrated in **FIGS. 10A through 10E**. In this embodiment, a “loose” diaper 80 is placed within a chamber 84B with a pair of encasement shells 82 disposed adjacent ends of the diaper. Rams 86 and 88 can be activated to compress the diaper into a volumetrically reduced configuration, as illustrated in **FIG. 10B**. Once optimal reduced volume is achieved, the diaper/shell assembly can be moved adjacent a channel 85 defined between the chambers 84A and 84B, as illustrated in **FIG. 10C**.

**[0090]** Channel 85 can provide access to the diaper/shell assembly to enable attachment of a clamping strap 90 to the shells 82. The strap can aid in maintaining relative position of the shells 82 after the pressure applied to reduce the volume of the diaper is released. Thus, as shown in **FIG. 10E**, the rams 86, 88 and chambers 84 can be removed from contact with the diaper, and the encasement maintains the diaper/shell assembly in the volumetrically reduced configuration. In this manner, it is not necessary to apply a vacuum to the encasement to create and maintain the volumetrically reduced size of the diaper. In another embodiment, the encasement can be made air tight by application of the clamping strap, and thus a combination of differential pressure and hoop strength of the encasement can contain the diaper after the encasement expands to an equilibrium state.

**[0091]** As shown in **FIGS. 11A and 11B**, in one aspect of the invention, a restraint 92 can be provided in which the diaper 12 can be disposed a second, reduced size, relative to a first, nominal size. The restraint 92 can confine the diaper so that the diaper is retained in its reduced size by the restraint and so that the diaper is returned to its nominal size upon opening of the restraint. The restraint can be a strap or a series of independent or interconnected straps, or, as shown in **FIG. 11B**, the restraint 94 can include a webbed material. The restraint can be formed of a material having sufficient strength to retain the diaper 12 in the reduced size, but can be removed by a consumer to release the diaper into the first, nominal size, for example by exploiting an engineered weakness, as is conventionally provided in “tear-away” packaging closures.

**[0092]** It is to be understood that the above referenced arrangements are illustrative of the application for the principles of the present invention. It will be apparent to those of ordinary skill in the art that numerous modifications can be made without departing from the principles and concepts of the invention as set forth in the claims.

1. a diaper kit, comprising:
  - (a) a single compressible diaper individually vacuum-sealed within an air impermeable encasement;
  - (b) at least one diaper accessory; and
  - (c) a container in which said vacuum-sealed diaper and said diaper accessory are disposed.
2. The kit of claim 1, wherein said container is substantially rectangular in shape.
3. The kit of claim 1, wherein said container is substantially cylindrical in shape.
4. The kit of claim 1, wherein the diaper accessory includes moist wipes that are accordion-folded and then rolled about an axis transverse to the fold for disposal within the cylindrical container.
5. The kit of claim 1, wherein said at least one diaper accessory comprises one of the group of cologne, perfume, and an odor-reducing spray.
6. The kit of claim 1, wherein said at least one diaper accessory comprises a dirty diaper disposal bag.
7. The diaper kit of claim 1, wherein said vacuum-sealed diaper disposed within said container is pocket sized.
8. The diaper kit of claim 1, wherein said vacuum-sealed diaper further comprises a tab that facilitates opening of said encasement for release of said diaper therefrom.
9. The diaper kit of claim 1, wherein said encasement is formed from a flexible material.
10. The diaper kit of claim 1, wherein said encasement comprises at least a portion thereof that is transparent such that said vacuum-sealed diaper is viewable through said encasement.
11. The diaper kit of claim 10, wherein said vacuum-sealed diaper includes printed indicia thereon, and said vacuum-sealed diaper is disposed within said encasement such that said printed indicia is visible through said transparent portion of said encasement.
12. A diaper kit, comprising:
  - (a) a packaged diaper comprising,
    - (i) a sealed substantially air impermeable encasement completely enclosing an interior space, and
    - (ii) a single compressible absorbent diaper disposed within said interior space of said sealed substantially air impermeable encasement,
    - (iii) wherein a pressure within said interior space of said sealed substantially air impermeable encasement is on the order of millibars (mbar);
  - (b) at least one diaper accessory; and
  - (c) a container in which said packaged diaper and said diaper accessory are disposed.
13. The diaper kit of claim 12, wherein said pressure is less than 10 millibars.
14. The diaper kit of claim 12, wherein said pressure is less than 20 millibars.
15. The diaper kit of claim 12, wherein said pressure is between about 5 millibars and about 1 millibar.
16. A diaper kit, comprising:
  - (a) a packaged diaper comprising,
    - (i) a sealed substantially air impermeable encasement completely enclosing an interior space, and

- (ii) a single compressible absorbent diaper disposed within said interior space of said sealed substantially air impermeable encasement,
- (iii) wherein said diaper includes a fold along a length-wise aspect of the diaper in its nominal configuration;

(b) at least one diaper accessory; and

(c) a container in which said packaged diaper and said diaper accessory are disposed.

**17.** The diaper kit of claim 16, wherein said packaged diaper is folded into a substantially rectangular shape.

**18.** The diaper kit of claim 16, wherein said packaged diaper has a size no larger than a conventional cigarette package.

**19.** The diaper kit of claim 16, wherein said packaged diaper has three dimensions consisting of a width, length, and height, and the sum of any two of said dimensions is less than 10 cm with no single dimension exceeding 10 cm.

**20.** The diaper kit of claim 19, wherein said encasement comprises at least a portion thereof that is transparent such that said packaged diaper is viewable through said encasement, and wherein said packaged diaper includes printed indicia thereon, and said packaged diaper is disposed within said encasement such that said printed indicia is visible through said transparent portion of said encasement

\* \* \* \* \*

## **EXHIBIT C**

# Exhibit C



US006723080B1

## (12) United States Patent Habib et al.

(10) Patent No.: US 6,723,080 B1  
(45) Date of Patent: Apr. 20, 2004

(54) PREPACKAGED DIAPER CHANGING KIT

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/399,471

(22) Filed: Sep. 21, 1999

(51) Int. Cl.<sup>7</sup> ..... A61F 13/20

(52) U.S. Cl. ..... 604/385.06; 206/570

(58) Field of Search ..... 604/385.06, 385.01; 206/777, 438, 812, 216, 210, 510; 248/118; 2/102

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Primary Examiner—Weilun Lo

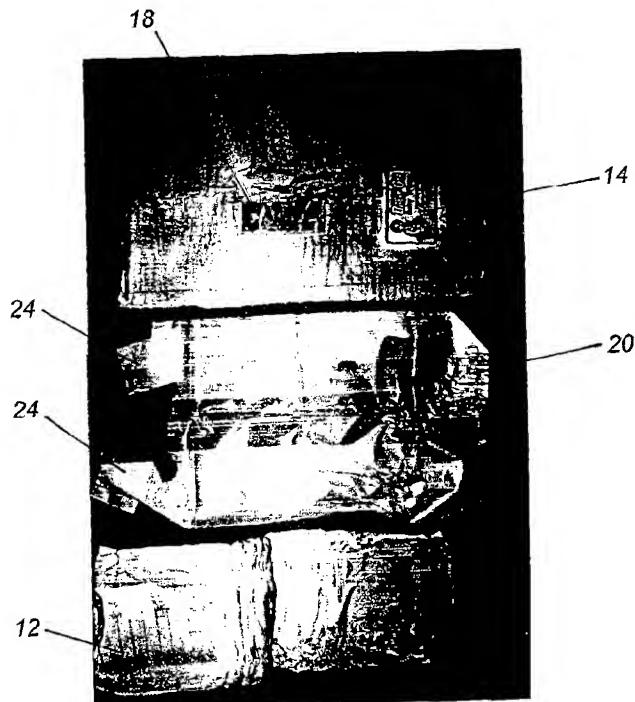
Assistant Examiner—Michelle Kidwell

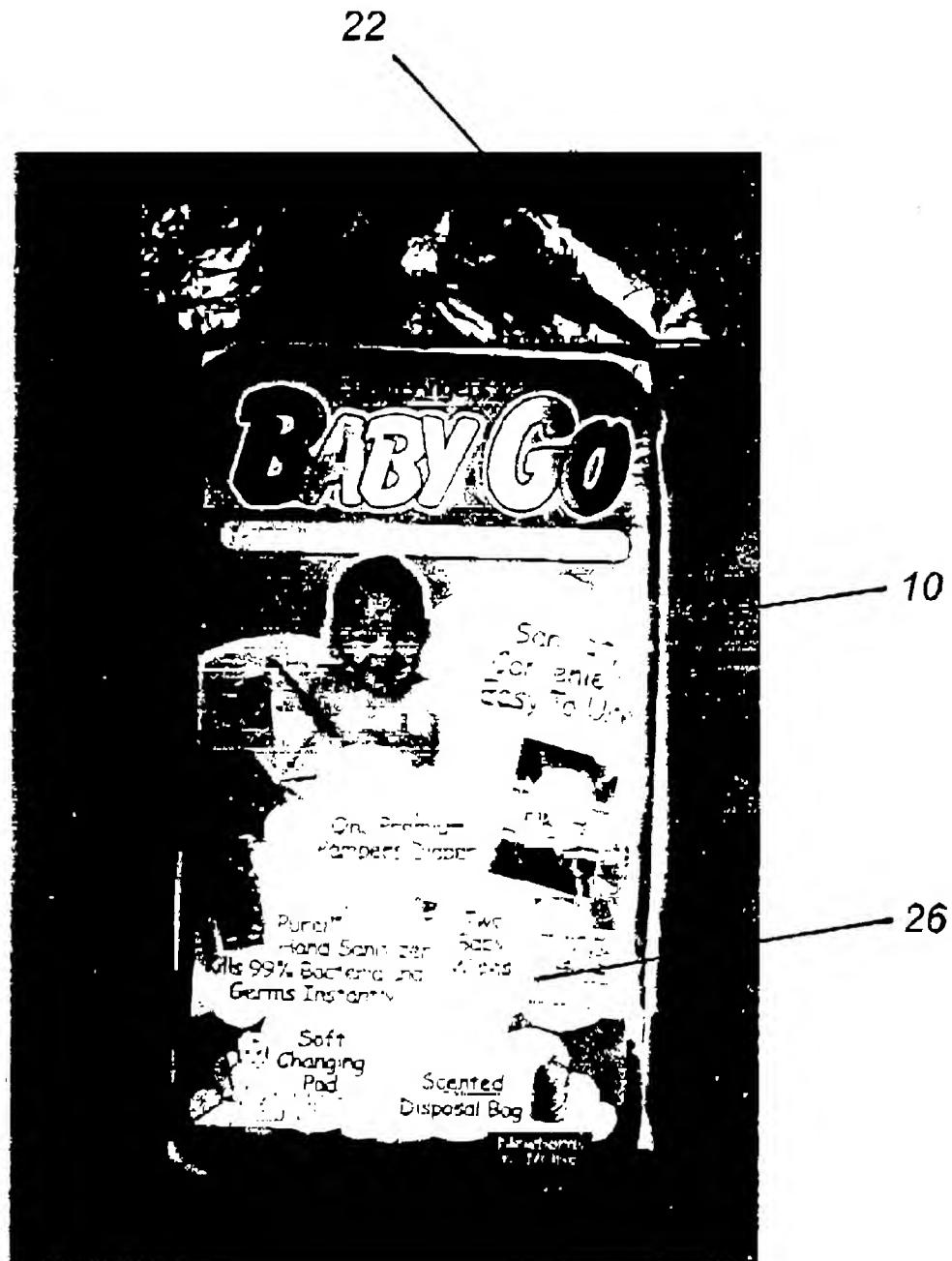
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(57) ABSTRACT

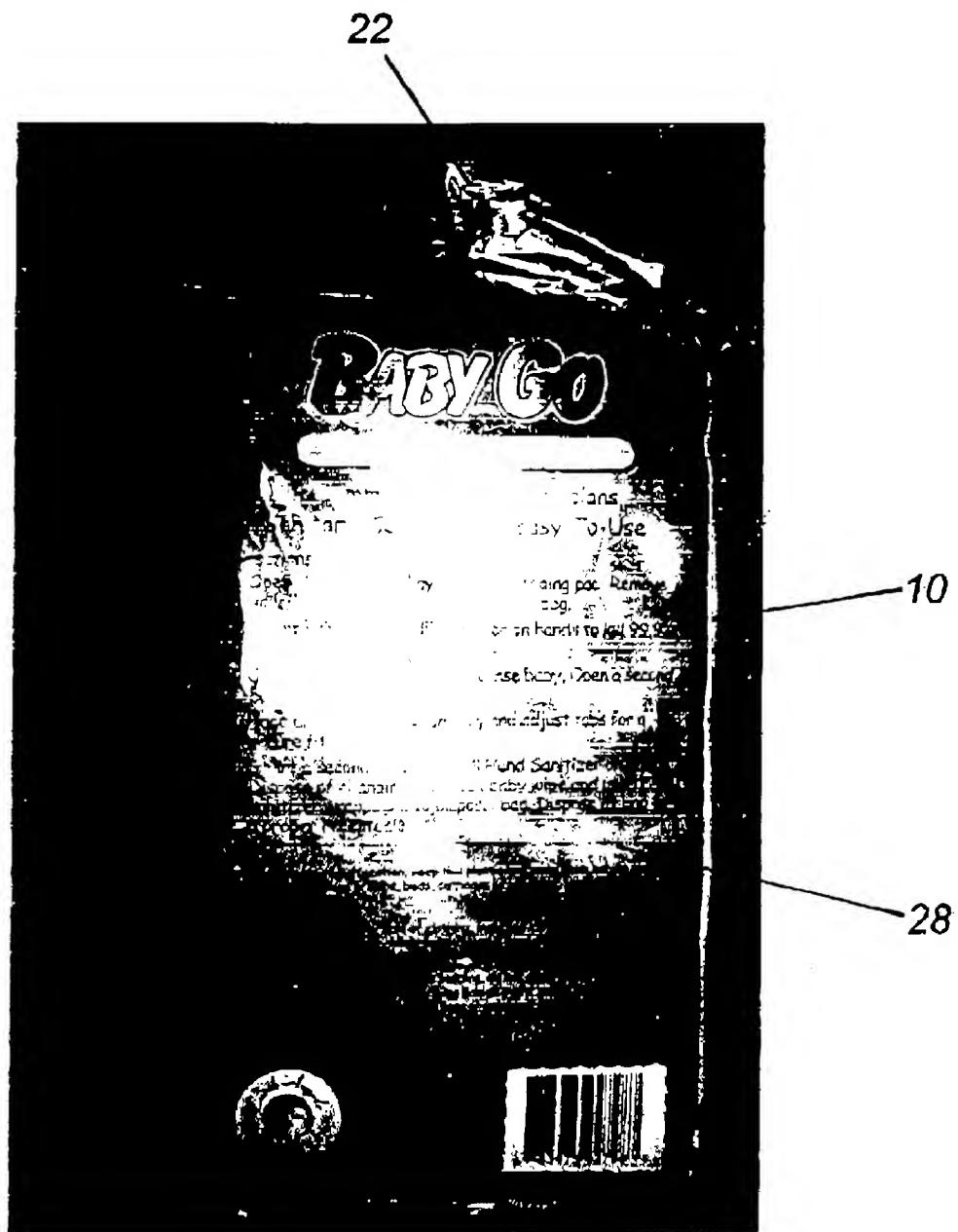
A prepackaged diaper changing kit which is compact and convenient to carry and use and which is capable of being both dispensed from a conventional vending machine, as well as being displayed on shelves and sold in conventional retail establishments. A preferred embodiment of this prepackaged diaper changing kit includes a disposable diaper, at least one (1), and more preferably two (2), prepackaged moist baby wipes, a prefolded baby liner, a prepackaged instant hand sanitizer and a prefolded disposable plastic bag. These items are preferably prepackaged together in a durable waterproof outer wrapper, such as an opaque plastic outer wrap film. The prepackaged diaper changing kit in accordance with the present invention provides all of the supplies needed to change a diaper for, for example, a newborn or infant, and, when finished, allows the user to secure and discard the dirty or wet diaper, as well as the used moist baby wipes and other left over packaging materials, in a safe and convenient manner.

7 Claims, 6 Drawing Sheets

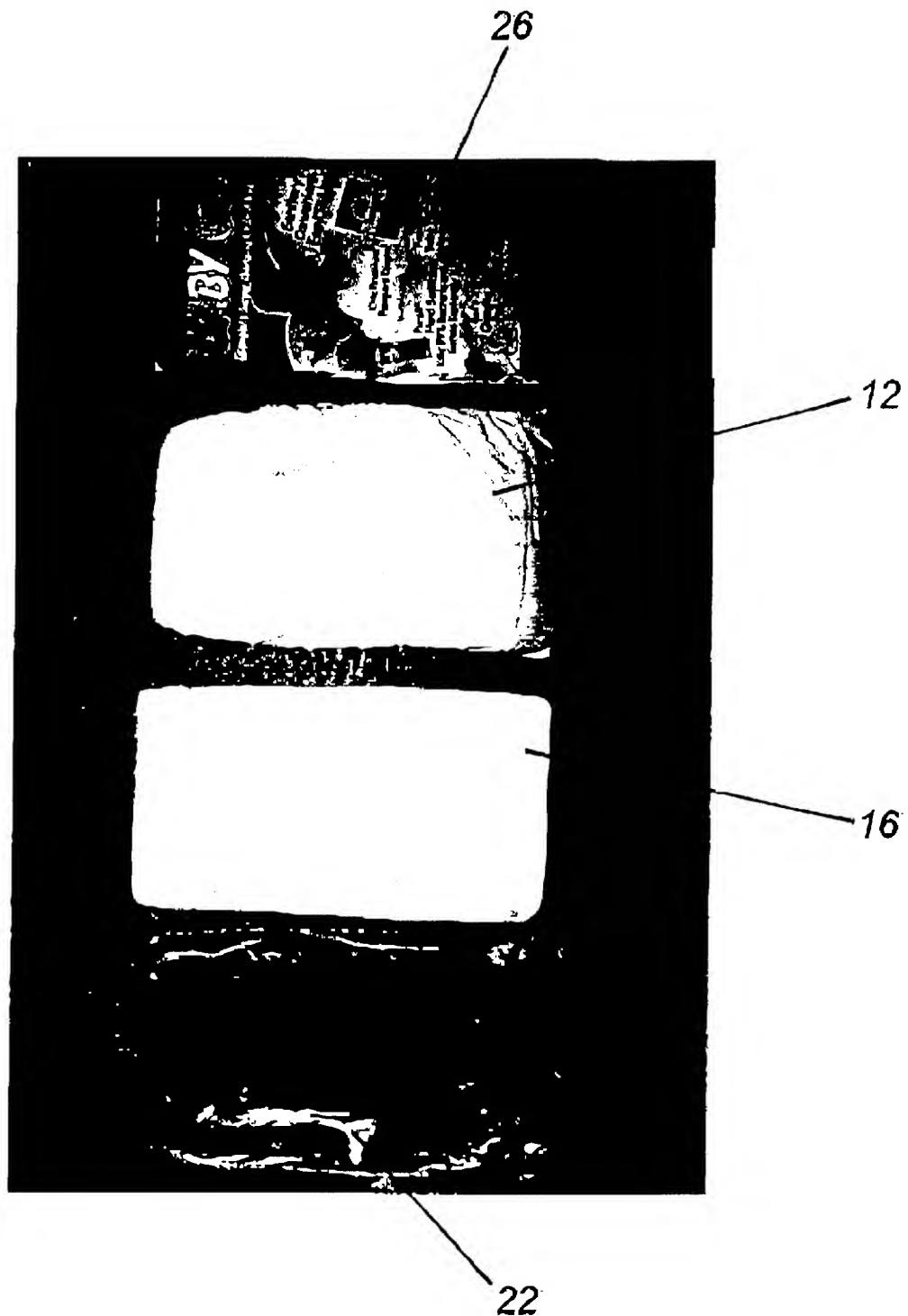


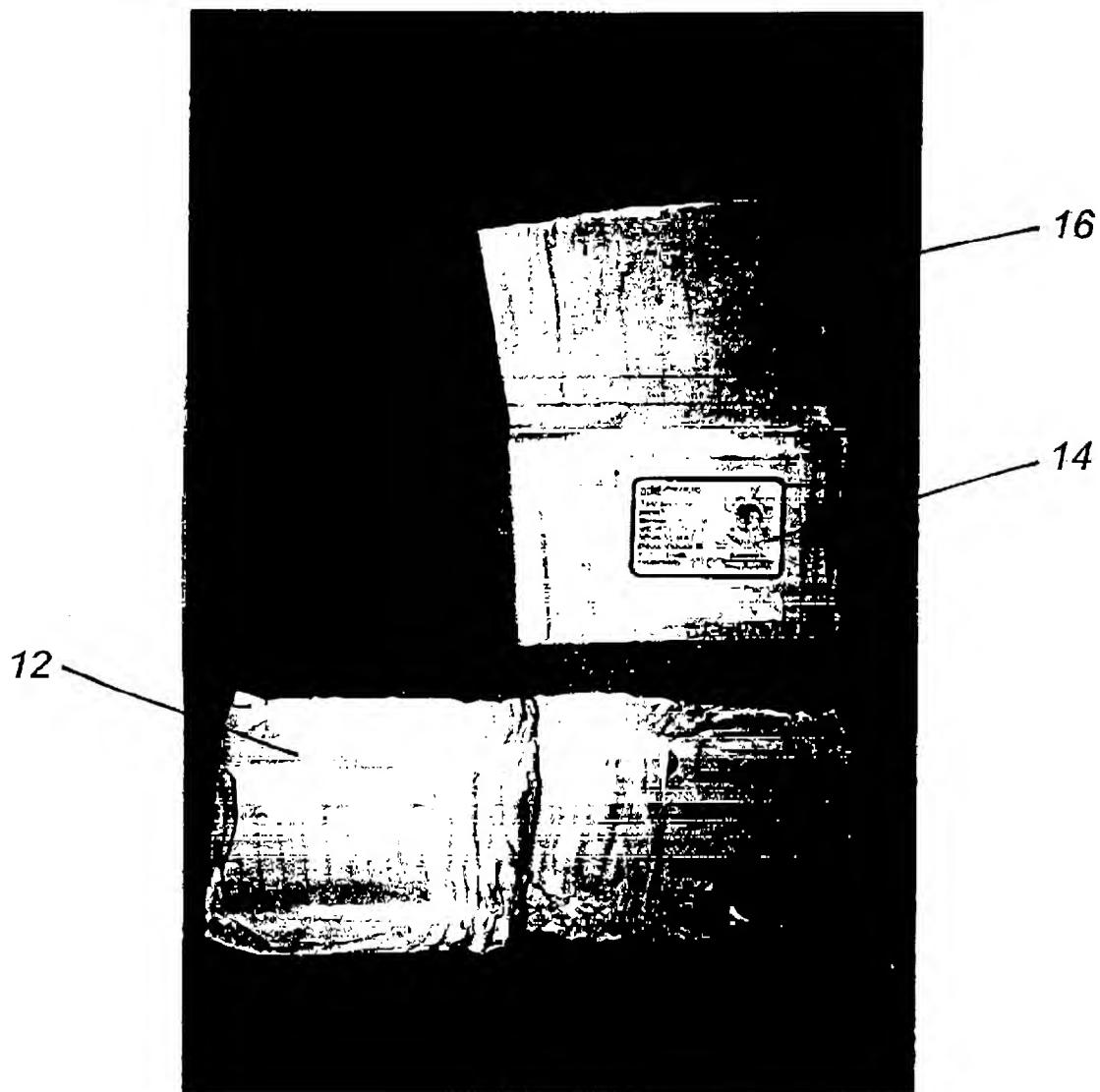


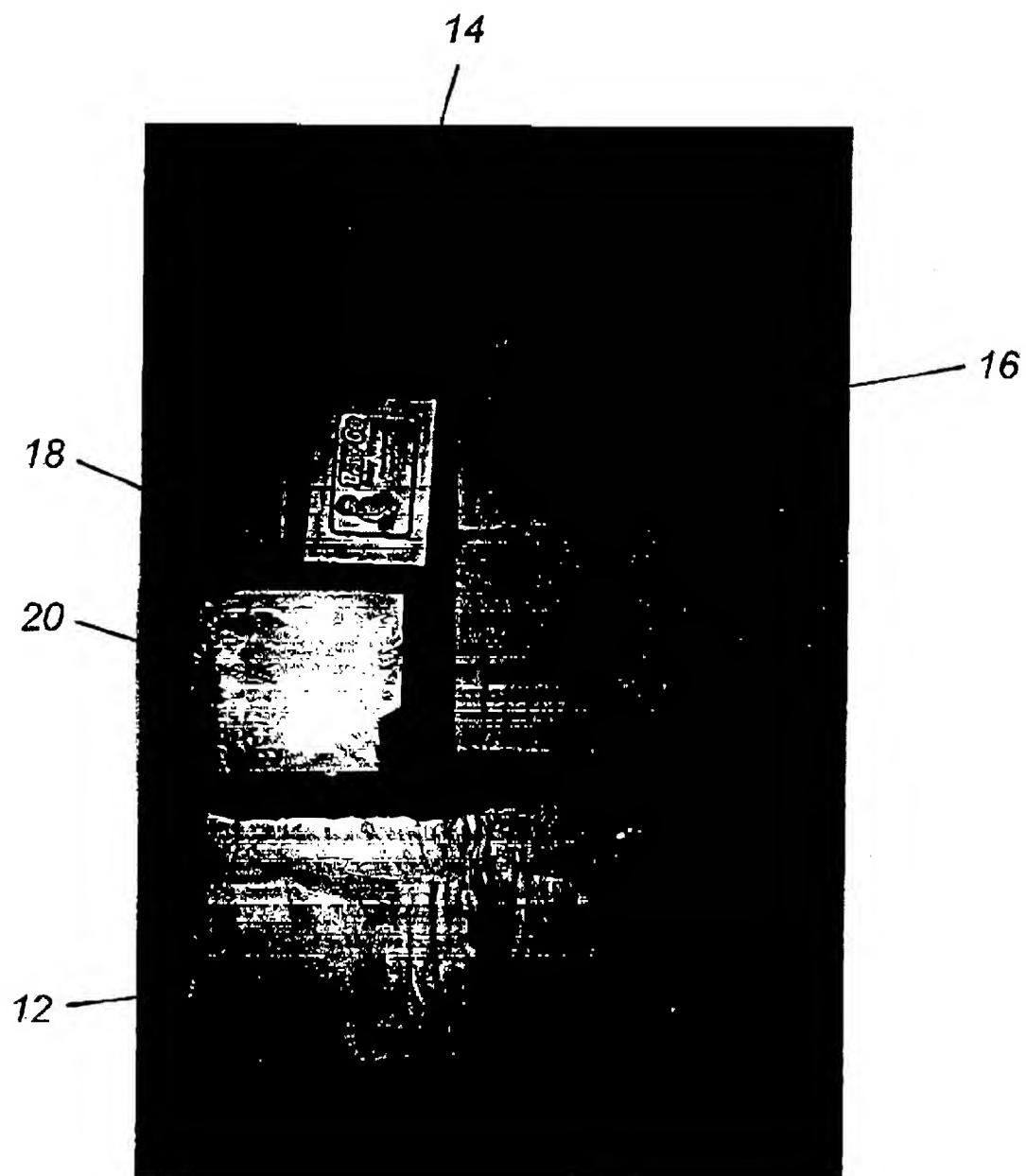
**FIG. 1**

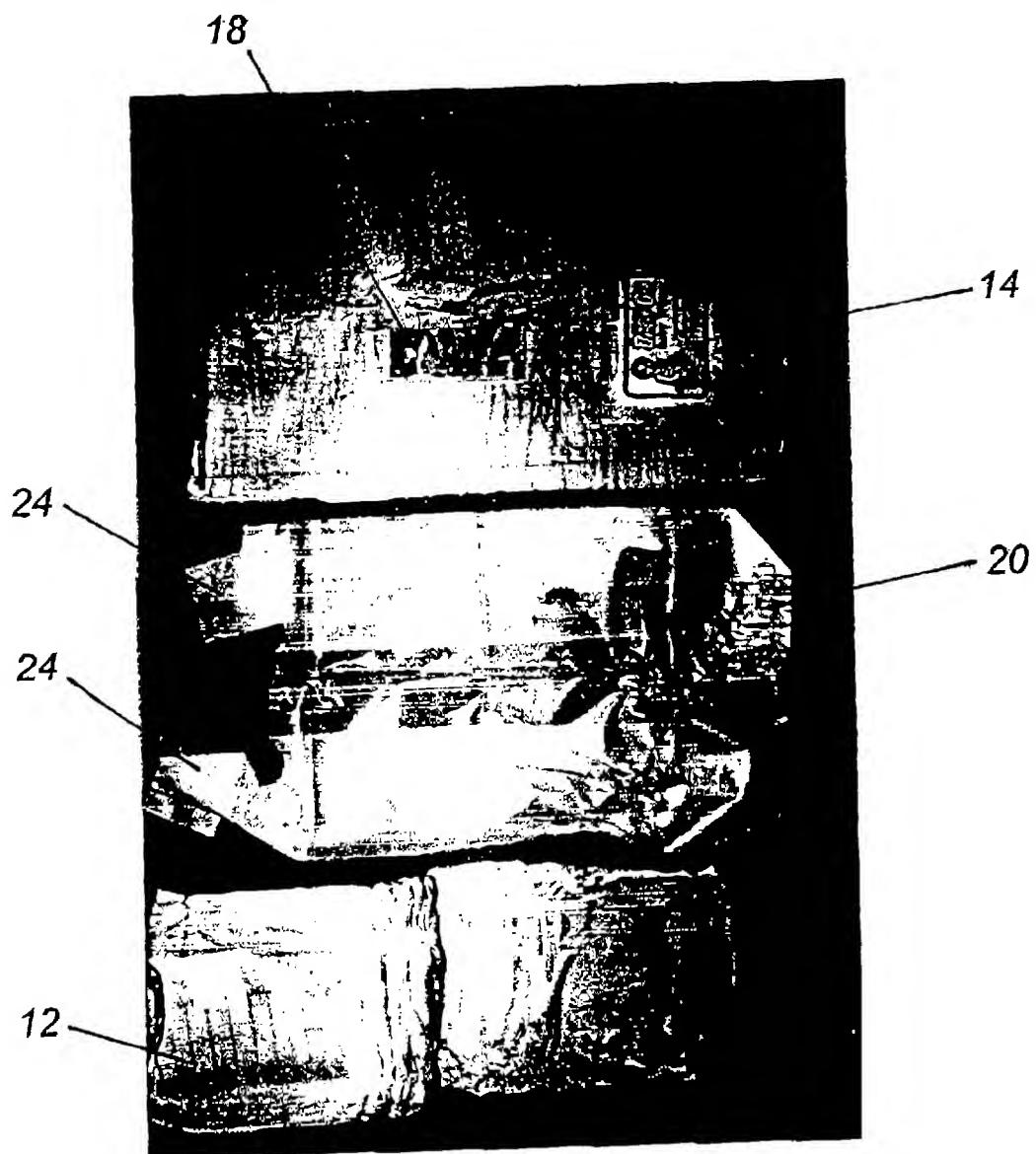


**FIG. 2**

**FIG. 3**

**FIG. 4**

**FIG. 5**



**FIG. 6**

## PREPACKAGED DIAPER CHANGING KIT

## BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates generally to new and novel improvements in a prepackaged diaper changing kit. More particularly, the present invention relates to a prepackaged diaper changing kit which is compact and convenient to carry and use and which is capable of being both dispensed from conventional vending machines, as well as being displayed on shelves and sold in conventional retail establishments.

Having the necessary items to change a newborn or infant's diaper, particularly when away from the home, is a recurring challenge for parents and others caring for newborns and infants. A diaper bag is often carried which includes supplies, such as a number of diapers, baby wipes, blankets and/or towels, as well as other items used in changing a newborn or infant's diaper. Such diaper bags are often bulky and cumbersome and are particularly inconvenient to transport and store in crowded public facilities, such as, for example, shopping centers, airports, sport stadiums and arenas, amusement parks, museums and restaurants. Furthermore, when using such diaper bags, often one or more of the supplies are used up or missing and this complicates the task of changing the newborn or infant's diaper. In addition, many people have the need to change a newborn or infant's diaper only occasionally, such as when grandchildren visit their grandparents, or when newborns or infants visit other relatives and/or friends who do not have young children themselves. In such situations, diapers and other supplies must either be carried with the newborn or infant or the host must purchase diapers and other supplies, generally available only in relatively large quantities, for the visiting newborn or infant.

In addition to being convenient and easy to use, the prepackaged diaper changing kit in accordance with the present invention provides several sanitation and environmental advantages. In particular, the prepackaged diaper changing kit in accordance with the current invention minimizes the transfer of bacteria and germs from the caregiver to the newborn or infant, minimizes the transfer of bacteria and germs from the newborn or infant to the environment, minimizes the transfer of bacteria and germs from newborn or infant to newborn or infant on the changing table, is readily disposable in an environmentally friendly manner and provides all of the necessary supplies to carry out the diaper changing process.

Accordingly, an object of the present invention is the provision of a prepackaged diaper changing kit which includes a disposable diaper, as well as the other supplies needed to change a diaper, and which is compact and convenient to carry and use.

Another object of the present invention is the provision of a prepackaged diaper changing kit which includes a disposable diaper, as well as the other supplies needed to change a diaper, and which is capable of being both dispensed from conventional vending machines, as well as being displayed on shelves and sold at conventional retail establishments.

These and other objects of the present invention are attained by a prepackaged diaper changing kit which is compact and convenient to carry and use and which is capable of being both dispensed from conventional vending machines, as well as being displayed on shelves and sold in conventional retail establishments. A preferred embodiment

of this prepackaged diaper changing kit includes a disposable diaper, one (1), or more preferably two (2), prepackaged moist baby wipes, a prefolded baby liner, a prepackaged instant hand sanitizer and a prefolded disposable plastic bag. 5 These items are prepackaged together in a durable waterproof outer wrapper, such as an opaque plastic outer wrap film. The prepackaged diaper changing kit in accordance with the present invention provides all of the supplies needed to change a diaper for, for example, a newborn or 10 infant, and, when finished, allows the user to secure and discard the dirty or wet diaper, as well as used moist baby wipes and other packaging materials, in a safe and convenient manner.

Other advantages and novel features of the present invention will become apparent in the following detailed description of the invention when considered in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

20 FIG. 1 is a photograph showing a top view of a prepackaged diaper changing kit in accordance with a preferred embodiment of the present invention.

25 FIG. 2 is a photograph showing a bottom view of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1.

30 FIG. 3 is a photograph showing a top view of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the exterior packaging opened and the contents of the prepackaged diaper changing kit removed therefrom.

35 FIG. 4 is a photograph showing a top view of the contents of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit partially unfolded and opened.

40 FIG. 5 is a photograph showing a top view of the contents of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit further unfolded and opened.

45 FIG. 6 is a photograph showing a top view of the contents of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit further unfolded and opened.

## DETAILED DESCRIPTION OF THE DRAWINGS

50 In the following detailed description of a preferred embodiment of the present invention, reference is made to the accompanying drawings which, in conjunction with this detailed description, illustrate and describe a preferred 55 embodiment of a prepackaged diaper changing kit in accordance with the present invention. Referring to FIGS. 1 through 6, which illustrate a top view of a prepackaged diaper changing kit in accordance with a preferred embodiment of the present invention, a bottom view of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, a top view of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the exterior packaging opened and the contents of the prepackaged diaper changing kit removed therefrom, a top view of the contents of the prepackaged diaper changing kit in accordance with the

preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit partially unfolded and opened, a top view of the contents of prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit further unfolded and opened, and a top view of the contents of the prepackaged diaper changing kit in accordance with the preferred embodiment of the present invention shown in FIG. 1, with the contents of the prepackaged diaper changing kit further unfolded and opened, respectively, prepackaged diaper changing kit, generally identified by reference number 10, is compact and convenient to carry and use and is capable of being both dispensed from conventional vending machines, as well as being displayed on shelves and sold in conventional retail establishments.

Prepackaged diaper changing kit 10 generally includes disposable diaper 12, prepackaged moist baby wipes 14, baby liner 16, prepackaged instant hand sanitizer 18 and disposable plastic bag 20, all of which are prepackaged in exterior packaging 22. Disposable diaper 12 is preferably a "snug-fit baby diaper" of conventional design and can be of different sizes for newborns, infants, toddlers, and even older children and adults, of different sizes. In a preferred embodiment of prepackaged diaper changing kit 10, two (2) different sizes of disposable diaper 12 are anticipated, a smaller size being suitable for newborns and infants of up to approximately eighteen (18) pounds and a larger size suitable for infants and toddlers from approximately eighteen (18) pounds up to approximately thirty six (36) pounds. Other sizes for disposable diaper 12 could also be used, for example, one size for newborns and infants of up to approximately twelve (12) pounds, a larger size suitable for infants from approximately twelve (12) pounds to approximately twenty four (24) pounds and yet a larger size suitable for infants and toddlers from approximately twenty four (24) pounds up to approximately thirty six (36) pounds. Still larger sizes for disposable diaper 12 could be used in prepackaged diaper changing kit 10 in accordance with the present invention, if desired, for still larger children and/or adults.

At least one (1), and more preferably two (2), prepackaged moist baby wipes 14 are included in each prepackaged diaper changing kit 10. Prepackaged moist baby wipes 14 preferably have a rectangular configuration in the range of four (4) to eight (8) inches in height and in the range of six (6) to twelve (12) inches in width and most preferably are approximately seven (7) inches in height by approximately eight (8) inches in width and are folded to fit into an outer wrapper, preferably at least partially fabricated from a waterproof barrier material such as, for example, a foil or plastic material. The outer wrapper preferably provides a barrier to maintain the moisture level of the moist baby wipe packaged inside, but should also be relatively easy for the user to open to remove the moist baby wipe. The moist baby wipes are preferably fabricated from an air-laid porous material which is saturated with a hypoallergenic mildly fragrant cleansing lotion and are, most preferably, alcohol free.

Baby liner 16 consists of a prefolded rectangular piece, preferably in the range of eleven (11) to fifteen (15) inches in height and in the range of fifteen (15) to twenty four (24) inches in width and most preferably is approximately thirteen and one half (13½) inches in height and approximately eighteen (18) inches in width. Baby liner 16 is preferably fabricated from a soft absorbent clothlike material on which

to place the newborn or infant, such as a 4-ply scrim material. Baby liner 16 can be used, if needed, to clean the newborn or infant and can also be used to wrap up the wet or dirty diaper and other items to be discarded therein.

Prepackaged instant hand sanitizer 18 is preferably prepackaged in a relatively flat waterproof packaging. Most preferably, prepackaged instant hand sanitizer consists of a prefolded sanitizing hand towel saturated with a sanitizing solution including a moisturizer, vitamins A and E and aloe 10 therein. The prefolded sanitizing hand towel is approximately five (5) inches in height by approximately seven and one half (7½) in width when unfolded. A suitable prepackaged prefolded sanitizing hand towel is distributed by GOJO Industries, Inc. in Akron, Ohio. Alternatively, prepackaged instant hand sanitizer 18 could consist of a prepackaged portion of a hand sanitizing solution, such as prepackaged portion of PURELL® hand sanitizer having 0.043 fluid ounces (1.33 ml) distributed by GOJO Industries, Inc. in Akron, Ohio. Prepackaged instant hand sanitizer 18 preferably 15 contains no water, requires no towels and kills 99.9% of bacteria and germs.

Disposable plastic bag 20 is preferably fabricated as a "junior" trash bag from a scented plastic material and includes outwardly extending arms 24 which allow a dirty or 20 wet diaper, as well as used moist baby wipe(s) and other packaging material, to be placed inside disposable plastic bag 20 and outwardly extending arms 24 are then tied together to secure the dirty or wet diaper, as well as the used moist baby wipe(s) and other packaging material, inside of 25 disposable plastic bag 20. Disposable plastic bag 20 and its contents can then be discarded when convenient in any suitable trash receptacle. Disposable plastic bag 20 is preferably prefolded to fit inside of exterior packaging 22.

Exterior packaging 22 is preferably dimensioned to be 30 slightly larger than the assembly consisting of disposable diaper 12, one (1), or more preferably two (2), prepackaged moist baby wipes 14, baby liner 16, prepackaged instant hand sanitizer 18 and disposable plastic bag 20 so disposable diaper 12, one (1), or more preferably two (2), prepackaged moist hand wipes 14, baby liner 16, prepackaged instant hand sanitizer 18 and disposable plastic bag 20 fit snugly 35 inside of exterior packaging 22. Exterior packaging 22 is preferably fabricated from an opaque plastic wrap film material, most preferably white, although a transparent, or a translucent material, such as a transparent plastic wrap film material, could alternatively be used to allow the contents inside exterior packaging 22 to be viewed when prepackaged diaper changing kit 10 is displayed.

However, exterior packaging 22 is most preferably fabricated from an opaque material having information such as the contents of prepackaged diaper changing kit 10, directions as to its use and disposal, warning and/or cautions about the use and/or disposal of prepackaged diaper changing kit 10, the manufacturer's name and address and other marketing and factual information, as desired, preprinted thereon. Such information is preferably preprinted on both the front and the back of exterior packaging 22. Alternatively, such information could be preprinted on only one of the front and back of exterior packaging 22, or, if desired, on neither the front or back of exterior packaging 22. In addition, exterior packaging 22 is preferably substantially waterproof to protect the contents of exterior packaging 22 from moisture, as well as from dirt and other environmental debris.

Most preferably, exterior packaging 22 is fabricated from an opaque plastic wrap film material having a top portion

presealed approximately one (1) inch from the top of exterior packaging 22 and an aperture substantially centered in this presealed top portion to allow prepackaged diaper changing kit 10 to be displayed on a projecting rod type display. When exterior packaging 22 having a presealed top portion is used, the contents of prepackaged diaper kit 10 are inserted through an opening present in the bottom of exterior packaging 22 and the bottom portion of exterior packaging 22 is then sealed using, for example, a heat plastic "welding" process and/or an adhesive.

If exterior packaging 22 is fabricated from a transparent or a translucent material, a front graphics card and/or a rear graphics card can be placed in front of and/or in back of, respectively, disposable diaper 12 to show through exterior packaging 22. The front graphic card and/or the rear graphics card can include information about the contents of prepackaged diaper changing kit 10, directions as to its use and disposal, warnings and/or cautions about the use and/or disposal of prepackaged diaper changing kit 10, the manufacturer's name and address and other marketing and factual information, as desired.

Other items could also be included in prepackaged diaper changing kit 10, if desired, such as, for example, prepackaged baby powder, prepackaged diaper rash ointment, prepackaged teething reliever ointment and/or a disposable bib. Prepackaged diaper changing kit 10 is capable of being readily dispensed from conventional vending machines. Such vending machines may be located in facilities such as, for example, airports, shopping centers, gas stations, highway rest areas, family restaurants, sports facilities and arenas, amusement parks and children recreation centers. In addition, individual prepackaged diaper changing kits 10 can be displayed on a shelf and sold in various retail establishments, such as, for example, convenience stores, grocery stores, pharmacies and department stores. In addition, multiple prepackaged diaper changing kits 10 can be prepackaged and distributed together in, for example, "six (6) packs" which could, for example, be given as a "maternity" gift to new parents by hospitals, be given as baby shower gifts or sold in multiple quantity packages in various retail establishments, such as, for example, convenience stores, grocery stores, pharmacies and department stores. It would be clear to those having ordinary skill in the relevant art that other quantities of multiple prepackaged diaper changing kits 10 could also be sold, such as, for example "twelve (12) packs" and/or "twenty four (24) packs," if desired. Prepackaged diaper changing kits 10 could also be marketed and sold by mail order or over the Internet.

To form prepackaged diaper changing kit 10, disposable plastic bag 20 is folded and is placed along with one (1), or more a preferably two (2), prepackaged moist baby wipes 14 and prepackaged instant hand sanitizer 18 inside folded baby liner 16. Folded baby liner 16 is then placed inside folded disposable diaper 12. If desired, one or both of a front graphics card and/or a rear graphics card are then placed in front of and/or behind, respectively, folded disposable diaper 12 and this assembly is then placed in exterior packaging 22 through a bottom opening in exterior packaging 22. The bottom opening of exterior packaging 22 is then sealed using, for example, a heat plastic "welding" process and/or an adhesive.

To use prepackaged diaper changing kit 10, exterior packaging 22 is opened and folded disposable diaper 12 is opened to facilitate the removal of baby liner 16. Baby liner 16 is then unfolded and placed on the surface where the newborn or infant is to be changed. The newborn or infant

is placed on baby liner 16 and the dirty or wet diaper is removed and placed into disposable plastic bag 20. Prepackaged instant hand sanitizer 18 is then opened and applied on the hands of the person who is changing the diaper of the newborn or infant to kill 99.9% of bacteria and germs. One (1), or if needed two (2), prepackaged moist baby wipes 14 are then opened and the newborn or infant is wiped and cleaned. If needed, baby liner 16 can also be used to wipe and clean the newborn or infant. Disposable diaper 12 is then placed on the newborn or infant and the tabs are adjusted as desired to provide a secure fit on the newborn or infant. Items to be discarded, including used moist baby wipe(s), opened prepackaged moist baby wipe wrapper(s), exterior packaging 22 and, if present, one (1) or both of the front graphics card and/or the rear graphics card are then rolled into baby liner 16 and baby liner 16 and its enclosed contents are placed in disposable plastic bag 20 for disposal. Prepackaged instant hand sanitizer 18 is then again applied on the hands of the person who changed the diaper of the newborn or infant to again kill 99.9% of bacteria and germs and prepackaged instant hand sanitizer 18 is also placed within disposable plastic bag 20. Outwardly extending arms 24 of disposable plastic bag 20 are then tied together and disposable plastic bag 20, along with its contents, can be carried and discarded, when convenient, into a suitable trash receptacle. Since disposable plastic bag 20 is preferably fabricated from a scented plastic material, little or no odor is left behind.

Accordingly, although the present invention has been described above in detail, the same is by way of illustration and example only and is not to be taken as a limitation on the present invention. It is apparent to those having a level of ordinary skill in the relevant art that other variations and modifications in the prepackaged diaper changing kit in accordance with the present invention, as described and shown herein, could be readily made using the teachings of the present invention. For example, other arrangement for inserting and sealing the contents of prepackaged diaper kit 10 could readily be utilized. Accordingly, the scope and content of the present invention are to be defined only by the terms of the appended claims.

What is claimed is:

1. A prepackaged diaper changing kit comprising:  
a disposable diaper folded inwardly along a longitudinal centerline;  
one or more baby changing supply items selected from the group consisting of a prepackaged moist baby wipe, a prepackaged instant hand sanitizer, a prepackaged baby powder, a prepackaged diaper rash ointment, a baby changing liner, and a disposable plastic bag, wherein said one or more baby changing supplies are placed in side said disposable diaper;  
exterior packaging which encloses said disposable diaper; and  
a prepackaged teething reliever ointment positioned inside said disposable diaper.
2. A prepackaged diaper changing kit comprising:  
a disposable diaper folded inwardly along a longitudinal centerline;  
one or more baby changing supply items selected from the group consisting of prepackaged moist baby wipes, a prepackaged instant hand sanitizer, a prepackaged baby powder, a prepackaged diaper rash ointment, wherein said one or more baby changing supply items are placed inside said disposable diaper;

a baby changing liner;  
a disposable plastic bag;  
exterior packaging which encloses said disposable diaper,  
said baby changing liner and said disposable plastic  
bag; and  
a disposable bib.

3. The prepackaged diaper changing kit in accordance  
with claim 2, wherein said exterior packaging includes text  
and/or images preprinted on a front surface thereof.

4. The prepackaged diaper changing kit in accordance  
with claim 2, wherein said exterior packaging includes  
text and/or images preprinted on a rear surface thereof.

5. The prepackaged diaper changing kit in accordance  
with claim 2, wherein said exterior packaging is substan-  
tially opaque.

10 6. The prepackaged diaper changing kit in accordance  
with claim 2 wherein said prepackaged diaper changing kit  
is capable of being dispensed from a conventional vending  
machine.

7. A prepackaged diaper changing kit comprising:  
a disposable diaper folded inwardly along a longitudinal  
centerline;

one or more baby changing supply items selected from the  
group consisting of prepackaged moist baby wipes, a  
prepackaged instant hand sanitizer, a prepackaged baby  
powder, and a prepackaged diaper rash ointment,  
wherein said one or more baby changing supplies are  
placed in side said disposable diaper;

a baby changing liner;  
a disposable plastic bag;  
exterior packaging which encloses said disposable diaper,  
said baby changing liner and said disposable plastic  
bag; and

a prepackaged teething reliever ointment positioned  
inside said disposable diaper.

\* \* \* \* \*

## **EXHIBIT D**

# Exhibit D

Oct. 2, 1956

N. K. HANSELMANN

2,764,859

METHOD OF PACKAGING COMPRESSIBLE ARTICLES

Filed Sept. 18, 1950

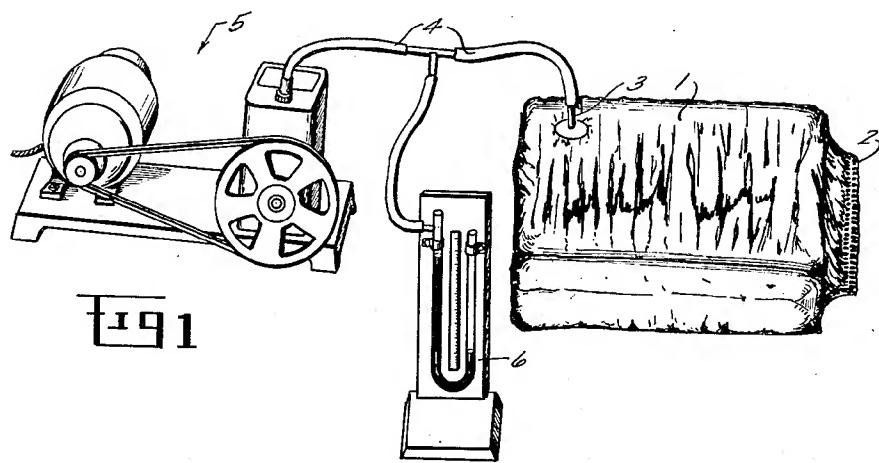


Fig 1

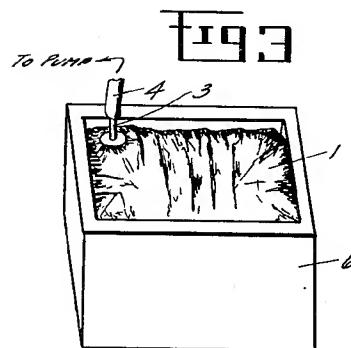


Fig 2

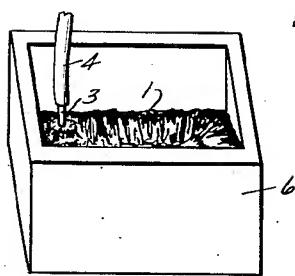


Fig 4

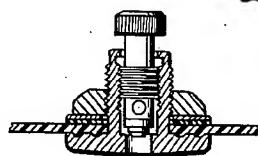


Fig 5

Fig 6

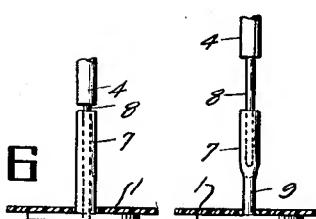


Fig 7

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# United States Patent Office

2,764,859

Patented Oct. 2, 1956

1

2,764,859

## METHOD OF PACKAGING COMPRESSIBLE ARTICLES

Norman K. Hanselmann, Dayton, Ohio

Application September 18, 1950, Serial No. 185,491

1 Claim. (Cl. 53—22)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the United States Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to a method of packaging non-rigid articles which are compressible and which ordinarily are bulky due to the presence of air in the interstices thereof. It is the object of the invention to provide a method of packaging articles of the above described type which results in a great reduction in volume of the article so that it can be stored and transported in a minimum space. It is a further object of the invention to provide a method of packaging compressible articles which in addition to reducing the volume of the article also permits the article to be molded into various shapes so as to permit storage thereof in irregular spaces with efficient utilization of space. It is a still further object of the invention to provide a method of packaging capable of attaining the above results which at the same time is simple, cheap and requires a minimum of equipment and apparatus.

Briefly the method consists in placing the article in a bag or non-rigid container made of a gastight plastic film, sealing the container, and then evacuating the container to as low a pressure as possible. The resulting removal of air from the interstices of the article permits the outside air pressure to compress the container and its contents to a minimum volume. If the evacuation is carried out slowly the container and its contents may be molded into a variety of shapes or molded to fit the space in which it is desired to store the article.

A more complete description of the process will be given in connection with the accompanying drawings in which:

Fig. 1 shows typical apparatus for vacuum packaging compressible articles in accordance with the invention.

Fig. 2 shows the general appearance of the article in Fig. 1 after vacuum packaging.

Figs. 3 and 4 show the method of molding the article during evacuation to fit a storage container.

Fig. 5 shows a suitable valve for use in evacuating the container, and

Figs. 6 and 7 show an alternative method of sealing the container after evacuation.

As already stated an article to be vacuum packaged in accordance with the invention must be non-rigid and have a compressible structure of the type that entrains a large amount of removable air. Referring to Fig. 1 such an article is placed in container 1 which is then sealed along edge 2. The container 1 must be made of a non-rigid or plastic material so that it can readily conform to the shape of the contained article. The material of which the container is made must also be practically impervious to gases and the necessary seals must be gas tight. A valve and nipple 3, which may be the commercially available type shown in Fig. 5 for example, is provided in the container to permit the connection of a hose 4 between the vacuum pump 5 and the container 1

2

for evacuation of the latter. A manometer 10 or other suitable pressure indicating device may be connected to the hose 4 to indicate the pressure in the container.

As the air is removed from the container and the inside pressure reduced the atmospheric pressure external thereto compresses the container and its contents. When the pressure in the container has been reduced to substantially zero the valve 3 is closed and the pump disconnected. After substantially complete evacuation the container and its contents are a solid high density mass, as represented in Fig. 2, having a volume much less than that of the article before packaging. The reduction in volume achieved depends of course upon the nature of the article. Bulky non-rigid articles having a fluffy interior structure of low density permit the greatest reduction in volume and may be vacuum packed with great advantage from the standpoint of space saving.

If it is desired to mold the package into a desired shape a form 6 such as shown in Figs. 3 and 4 may be used. 20 The package is placed in the form before evacuation, as shown in Fig. 3, and evacuated while in the form. When completely evacuated the package forms a rigid unyielding mass, however, during evacuation and before the pressure is reduced to a very low level the mass is 25 pliable and may be made to conform to the shape of the form by the application of external force. This force may be applied directly to the mass by the hands or by the use of a suitable implement. In Figs. 3 and 4 the form is shown as rectangular, however it may take any 30 desired configuration. Such forms may be used to advantage to premold a package into an irregular shape so that it may be fitted into a similar irregularly shaped storage space. Slow evacuation is best during the molding process.

35 In general vinyl plastic film having a thickness of about .012" is a very satisfactory material for the container 1, since it is highly impervious to gases and moisture and is easily sealed. However vinyl plastic has the disadvantage that it becomes brittle at extremely low 40 temperatures. In cases where the package is to be subjected to low temperatures, polyethylene film has been found suitable since it remains pliable at such temperatures. Polyethylene however does not form as good a barrier against gases and moisture as the vinyl plastic 45 film and therefore when polyethylene is used it has been found advisable to use a composite film consisting of an inner layer of polyethylene, a layer of metal foil and an outer layer of scrim or other protective fabric.

Instead of using a valve of the type shown in Fig. 5 50 the arrangement shown in Figs. 6 and 7 may be used. The container 1 is fitted with a plastic tube 7 through which a hollow rigid tube 8, attached to hose 4, may be inserted for withdrawing the air from the container. After evacuation is complete the tube 8 is partly withdrawn and the plastic tube 7 sealed as at 9 in Fig. 7. The excess length of tube 7 may then be cut off if desired.

55 The above described process of vacuum packaging is particularly useful in military survival kits. Such kits for use in cold climates or in the arctic regions contain a sleeping bag as well as certain other articles of clothing for protection against the extreme cold. These survival kits are usually transported by aircraft either as individual units for the use of the crew of the airplane and to be carried down with each crewman in bailing out, or else in larger units to be dropped to men on the ground. In both cases it is highly important to pack the kits in as small a volume as possible since space on an airplane is always at a premium. The sleeping bag is the largest, bulkiest item in the kit and the most difficult to hand pack in a small space. By vacuum packing a sleeping

bag in accordance with the above described process its volume can be reduced from 40 to 50 percent below the minimum volume that can be attained by ordinary methods of packing. One particular instance in which vacuum packaging is highly advantageous is in the case of the survival kit packed in a fighter pilot's contour seat of the ejectable type. In this case the sleeping bag is premolded, as explained in connection with Figs. 3 and 4, to fit the contour of the seat so that in packing it against the seat a very efficient utilization of space is obtained. The mold of course would be shaped in this case to conform to the configuration of the seat. No appreciable impairment of the heat insulating properties of sleeping bags and clothing as a result of vacuum packaging has been found.

I claim:

The method of packaging, reducing the volume of and molding into a desired form a non-rigid article of the type that normally contains throughout its structure a relatively large amount of removable interstitial air, said method comprising the steps of placing said article in a non-rigid, gas impervious container, sealing said con-

10 tainer, placing said sealed container in a mold having the shape that it is desired to impart to the package, slowly evacuating said container to substantially zero pressure, and forcing said container into contact with the surface 15 of the mold during evacuation.

4  
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## **EXHIBIT E**

# Exhibit E



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/906,828	03/08/2005	Alan K. Snell	1032011	3828
36790	7590	07/21/2005	EXAMINER	
TILLMAN IVSAN, PLLC PO BOX 471581 CHARLOTTE, NC 28247			GIBSON, KESHIA L	
		ART UNIT		PAPER NUMBER
		3761		

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE  
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Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT      PAPER

20050712

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/906,828	SNELL, ALAN K.
	Examiner	Art Unit
	Keshia Gibson	3761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1)  Responsive to communication(s) filed on \_\_\_\_\_.
- 2a)  This action is **FINAL**.                            2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4)  Claim(s) 1-10, 12, 15-19 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-10, 12, 15-19 and 21-24 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 3/8/05 is/are: a)  accepted or b)  objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some \* c)  None of:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/9/13, & 6/28/05.
- 4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because of the language "on the order of millibars" it is suggested this be changed to "on the order of a millibar" as reflected in amendments to the specification and claims. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-3, 5-7, and 9-10, 12, 15-19 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Habib et al. (6,723,080 B1) in view of Hanselmann (US 2,764,859).

In regard to Claim 1, Habib et al. disclose a diaper kit 10 comprising a diaper 12, at least one diaper accessory 14, 16, 18, 20, and an encasement 22 (column 3, lines 17-42). The diaper 12 and at least one diaper accessory 14, 16, 18, 20 are disposed within the encasement 22 (Figs. 1-6; column 2, line 51-column 3, line 42). Habib et al. do not disclose that the diaper kit is vacuum-sealed so as to create a differential pressure nor do they expressly disclose that the encasement is air impermeable.

Hanselmann teaches packaging kits into air impermeable encasements 1 so as to create a differential pressure (column 1, lines 35-48; column 1, line 58- column 2, line 34; column 2, line 58-column 3, line 15). The encasement is to have an airtight seal (column 1, lines 65-68). Hanselmann goes on to teach that vacuum-packing kits results in a great reduction in volume of (compressible) articles, a need for minimum transportation and storage space, and the ability to mold the articles into various shapes to permit storage in irregular-shaped spaces (column 1, lines 18-34). Thus, it

would have been obvious to one of ordinary skill in the art to modify the diaper kit of Habib et al. so by vacuum-sealing diaper and diaper accessories within an air impermeable encasement having an airtight seal as taught by Hanselmann since doing so would result in a reduction in volume of articles and in storage space, and would allow for molding of the articles into various shapes to permit storage in irregular-shaped spaces.

In regard to Claim 2-3, Hanselmann discloses that the kit may be any shape, including rectangular and would include cylindrical (Fig. 2; column 1, lines 41-44; column 2, lines 29-34).

In regard to Claim 5, Habib et al. discloses that the diaper accessory 14, 16, 18, 20 may be baby powder (column 5, lines 21-24).

In regard to Claim 6, Habib et al. also disclose that the kit comprises a disposal bag 20 for a dirty diaper (column 4, lines 22-33; column 6, lines 12-28).

In regard to Claim 7, Habib et al. disclose that the kit is sized to fit in a vending machine; thus it is considered to be of a size capable of fitting into a pocket (column 1, lines 56-61; column 5, lines 21-49).

In regard to Claim 9, Habib et al. disclose that the encasement 22 is made from plastic wrap film, which is flexible (column 4, lines 65-66). Also, Hanselmann disclose that the encasement 1 is to be non-rigid or plastic (column 1, lines 63-68).

In regard to Claim 10, Habib discloses that the encasement 22 may be transparent to allow for viewing of the materials disclosed therein (column 4, lines 42-48; column 5, lines 11-20).

In regard to Claim 12, as discussed for Claim 1, Habib et al. in view of Hanselmann disclose a diaper kit comprising a diaper and at least one diaper accessory that have been vacuum-sealed within an air impermeable encasement so as to create a pressure differential that acts upon the encasement. Habib et al. in view of Hanselmann do not expressly disclose that pressure within the encasement is on the order of magnitude of a millibar. However, the pressure within the encasement is a variable that affects the degree to which the encasement and its contents are reduced. Thus, it would have been obvious to one of ordinary skill in the art to provide the interior of the encasement with a pressure on the order of a millibar, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In regard to Claim 15, see discussion for Claim 12.

In regard to Claims 16, as discussed for Claim 1, Habib et al. in view of Hanselmann disclose a diaper kit comprising a diaper and at least one diaper accessory that have been vacuum-sealed within an air impermeable encasement so as to create a pressure differential that acts upon the encasement. Habib et al. further disclose that the diaper 12 is folded (column 5, lines 54-59).

In regard to Claim 17, the folded diaper 12 may be rectangular in shape (Figs. 1-5).

In regard to Claim 18-19 and 21-22, Habib et al. in view of Hanselmann do not expressly disclose that the size or relative dimensions of the packaged diaper. However, Hanselmann teaches reducing the volume of a packaged kit and manipulating the shapes of the kit to permit storage in irregular spaces. A change in the size or shape

of a prior art device is a design consideration within the skill of the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CPA 1966).

In regard to Claim 23-24, Habib discloses that the diaper 12 may be sized for an incontinent adult (column 3, lines 18-42).

6. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Habib et al. in view of Hanselmann as applied to claims 1-3, 5-7, and 9-24 above, and further in view of Narawa et al. (JP 10-95481).

In regard to Claim 4, Habib et al. in view of Hanselmann disclose the claimed invention but do not expressly disclose that the package includes a tab to facilitate opening. Narawa et al. disclose an unused diaper 2 that is sealed (analogous to vacuum-sealed) within an air impermeable encasement 3 after been vacuumed (analogous to air being removed from the encasement (abstract, means for solving the problem, effect of the invention, examples). Narawa et al. further disclose that the encasement 3 comprises a notch 36 to facilitate opening of the encasement 3 (Drawing 1; Embodiment of the Invention- [0020]-[0021]). Habib et al., Hanselmann, and Narawa et al. are because they are from the same field of endeavor: packaging of compressible items. Thus, it would have been obvious to one of ordinary skill in the art to modify the package of Habib et al. in view of Hanselmann to have a tab as taught by Narawa et al. since doing so would facilitate ease of opening the package.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Habib et al. in view of Hanselmann as applied to claims 1-3, 5-7, and 9-24 above, and further in view of Bonk (US 3,986,479).

In regard to Claim 8, Habib et al. disclose that the packaged diaper kit 10 contains pre-moistened wipes 14 (column 3, lines 43-60). Thus, Habib et al. in view of Hanselmann disclose the claimed invention but do not expressly disclose that the wipes are accordion-folded and then rolled about an axis traverse to the folds for disposal within the container. Bonk discloses a towelette dispenser comprising a plurality of wipes, wherein the wipes may be z-folded (accordion folded) then rolled about an axis traverse the folds to provide for larger towelettes and improved ease of withdrawal of the wipes from the dispenser (Figs. 5, 8, 9, 13-16; abstract; column 2, lines 26-34; column 3, lines 6-12 and 58-62; column 9, lines 24-56). Habib et al., Hanselmann, and Bonk are analogous art because they are from the same field of endeavor: packaging of compressible items. Thus, it would have been obvious to one of ordinary skill in the art to modify the packaged wipes of Habib et al. in view of Hanselmann to be accordion-folded and then rolled about an axis traverse to the folds for disposal within the container as taught by Bonk, since doing so would provide for larger towelettes and improved ease of withdrawal of the wipes from the container.

TATYANA ZALUKAEVA  
PRIMARY EXAMINER



***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cook et al. (US 5,242,057).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keshia Gibson whose telephone number is (571) 272-7136. The examiner can normally be reached on M-F 8:30 a.m. - 6 p.m., out every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tatyana Zalukaeva can be reached on (571) 272-1115. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Keshia Gibson  
Examiner, Art Unit 3761  
klg 7/13/05

PTO/SB/00A (08-03)

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U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 11

of 18

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1032.011

U. S. PATENT DOCUMENTS				
Examiner Initials*	Cite No.	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		US- 2003-0073970 A1	04-17-2003	Suga
		US- 2002-0078665 A1	06-27-2002	Salman
		US- 2002-0079246 A1	06-27-2002	Ling
		US- 2002-0117419 A1	08-29-2002	Tippey
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		US- 2005-0015052 A1	01-20-2005	Klippen
		US- 1,994,135	03-12-1935	Horowitz

FOREIGN PATENT DOCUMENTS				
Examiner Initials*	Cite No.	Foreign Patent Document Country Code <sup>3</sup> "Number" "Kind Code" (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		WO 89/00037	01-12-1989	Froidh
		WO 90/01311	02-22-1990	Rawlings
		WO 95/32698	12-07-1995	LeVon
		WO 96/41753	12-27-1996	Bauer
		WO 97/33815	09-18-1997	Mattlasson
		WO 98/57675	12-23-1998	Kalentun

Examiner Signature:	KG	Date Considered:	7/12/05
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\*EXAMINER. Initial if referenced considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \*Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>2</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to the (and by the USPTO) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 12

of 18

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
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Examiner Name	TBD

Attorney Docket Number 1032.011

U. S. PATENT DOCUMENTS				
Examiner Initials*	Cite No.†	Document Number Number-Kind Code‡ (if Known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		US- 2,145,137	01-24-1939	Sayers
		US- 2,935,828	05-10-1960	Mahaffy
		US- 3,343,663	09-26-1967	Bradford
		US- 3,442,686	05-06-1969	Jones
		US- 3,605,745	09-20-1971	Schaar
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		US- 4,573,608	03-04-1988	Hansen
		US- 4,577,463	03-25-1988	Hofeler

FOREIGN PATENT DOCUMENTS				
Examiner Initials*	Cite No.†	Foreign Patent Document Country Code‡ Number-Kind Code§ (if Known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
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		WO 00/19953	04-13-2000	Tameishi
		WO 00/19954	04-13-2000	Tameishi
		WO 01/64156 A1	09-07-2001	Clark
		WO 02/085271 A1	10-31-2002	McManus
		WO 02/094678 A1	12-28-2002	Kondo

Examiner Signature		Date Considered	7/12/05
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \*Applicant's unique citation designation number (optional) ‡See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 801.04. §Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ¶For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. \*Applicant is to place a check mark here if English language Translation is attached.

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PTO/SB/08A (08-03)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3

of 8

## Complete if Known

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1032.011

## U. S. PATENT DOCUMENTS

Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (# known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
KG		US- 4,585,448	04-29-1986	Enloe	
		US- 4,594,835	06-17-1986	Gray	
		US- 4,598,528	07-08-1986	McFarland	
		US- 4,630,320	12-23-1986	Van Gompel	
		US- 4,641,381	02-10-1987	Haran	
		US- 4,648,382	03-03-1987	Haran	
		US- 4,765,477	08-23-1988	Froidh	
		US- 4,798,603	01-17-1989	Meyer	
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		US- 4,833,862	05-30-1989	Bortolani	
		US- 4,886,512	12-12-1989	Damico	
		US- 3,645,060	02-29-1972	Hammond	
		US- 4,964,859	10-23-1990	Feldman	
		US- 5,016,778	05-21-1991	Reiland	
		US- 5,054,819	10-08-1991	Muckenfuhs	
		US- 5,065,868	11-19-1991	Cornelissen	
		US- 5,141,505	08-25-1992	Barrett	
		US- 5,176,668	01-05-1993	Bernadin	
		US- 5,192,608	03-09-1993	Proxmire	

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Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>2</sup> Number <sup>3</sup> Kind Code <sup>3</sup> (# known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>4</sup>
KG		WO 02/086331 A2	12-05-2002	Hirotsu		
		WO 2005/005276 A1	01-20-2005	Hermannsson		
		EP 1413272 A1	04-28-2004	Mizutani		
		EP 1205171 A2	05-15-2002	Otsubo		
		EP 1205171 A3	05-15-2002	Otsubo		
		EP 0747295 A1	12-11-1996	Bauer		

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7/12/05

<sup>1</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 603. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>2</sup>Applicant's unique citation designation number (optional). <sup>3</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language translation is attached.

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PTO/SB/08A (08-03)

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 4

of 5

## Complete If Known

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD

Attorney Docket Number 1032.011

U. S. PATENT DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		US- 5,255,817	10-26-1993	Reiland
		US- 5,295,988	03-22-1994	Muckenfuhs
		US- 5,304,158	04-19-1994	Webb
		US- 5,383,872	01-24-1995	Roessler
		US- 5,413,568	05-19-1995	Roach
		US- 5,482,168	10-31-1995	Minton
		US- 5,509,915	04-23-1996	Hanson
		US- 5,520,674	05-28-1996	Lavon
		US- 5,564,261	10-15-1996	Kiner
		US- 5,651,778	07-29-1997	Melius
		US- 5,666,787	09-16-1997	Young
		US- 5,678,727	10-21-1997	Rice
		US- 5,897,542	04-27-1999	Lash
		US- 5,971,153	10-26-1999	Bauer
		US- 5,986,165	11-16-1999	Moder
		US- 5,016,778	05-21-1991	Reiland
		US- 6,028,240	02-22-2000	Wessel
		US- 6,040,494	03-21-2000	Kalentun
▼		US- 6,050,984	04-18-2000	Fujioka

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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>4</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
KG		EP 0539703 B1	03-05-1997	Hanson		✓
		GB 2,277,914 A	11-16-1994	Nakanishi		
		GB 2,366,730 A	03-20-2002	MacNeil		
		JP 11-113956 A (Abstract)	04-27-1999	Moriura		✓
		JP 10-305059 A (Abstract)	11-17-1998	Shiseido Co Ltd		✓
▼		JP 10-095481 A	04-14-1998	Narawa		✓

Examiner Signature

Date Considered

7/12/05

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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 5

of 8

## Complete if Known

Application Number	10/905,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1032.011

U. S. PATENT DOCUMENTS				
Examiner Initials*	Citg No.*	Document Number Number-Kind Code* (known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		US- 6,079,562	06-27-2000	Bauer
		US- 6,115,781	09-12-2000	Skeens
		US- 6,260,211 B1	07-17-2001	Rajala
		US- 6,264,972 B1	07-24-2001	Drury
		US- 6,297,424 B1	10-02-2001	Olson
		US- 6,316,687 B1	11-13-2001	Davis
		US- 6,387,085 B1	05-14-2002	Van Gompel
		US- 6,408,872 B1	08-25-2002	Skeens
		US- 6,423,045 B1	07-23-2002	Wise
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		US- 6,497,692 B1	12-24-2002	Tameishi
		US- 6,575,191 B2	06-10-2003	Skeens
		US- 6,575,947 B1	06-10-2003	Tameishi
		US- 6,581,641 B2	06-24-2003	Skeens
		US- 6,630,237 B2	10-07-2003	Rivett
		US- 6,634,384 B2	10-21-2003	Skeens
▼		US- 6,723,080 B2	04-20-2004	Habib

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Examiner Initials*	Citg No.*	Foreign Patent Document Country Code* Number* Kind Code* (known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		GB 627,218	01-12-1950	International Cellu-Cotton
		DE 29620118 U1 (Abstract)	04-30-1998	Serra-Roll
		EP 0354172 A1	02-07-1990	Leone
		EP 1400223 A1	03-24-2004	Becker
		WO 2005/009311 A1	03-02-2005	Klippen
▼		JP 03256848 A (Abstract)	11-15-1991	Suematsu

Examiner Signature	RG	Date Considered	7/12/05
RG			

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Sheet 6

of 8

Application Number	10/908,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1032,011

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
KG		US 6,321,513	11-27-2001	Meixner	
		UG 6,502,695	01-07-2003	Kim	
		US 4,704,116	11-03-1987	Entoe	
		US 4,706,845	11-17-1987	Schnurer	
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		US 6,500,160	12-31-2002	Mizutani	
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		US 2,764,859	10-02-1956	Hanselmann	
		US 2,834,459	05-13-1958	Rickard	
		US 3,537,226	11-03-1970	LeVan	
		US 3,716,961	02-20-1973	Cope	
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		US 4,566,130	01-21-1986	Coates	
		US 4,702,378	10-27-1987	Finkel	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>2</sup> -Number <sup>3</sup> Kind Code <sup>4</sup> (known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
KG		JP 04339724 A	11-26-1992	Kaneda	✓
		JP 05139473 A (Abstract)	06-08-1993	Masaki	✓
		JP 06007213 A (Abstract)	01-18-1994	Tachikawa	✓
		JP 2000043818 A (Abstract)	02-15-2000	Nakanishi	✓
		JP 2000333988 A (Abstract)	12-05-2000	Suzuki	✓
		JP 2001114214 A	04-24-2001	Nakanishi	✓

Examiner Signature	Date Considered
KG	7/12/05

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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet

7

of 8

Complete if Known

Application Number	10/908,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	TBD
Examiner Name	TBD

Attorney Docket Number 1032.011

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		US- 4,790,840	12-14-1988	Cortina
		US- 4,808,175	02-28-1989	Hansen
		US- 4,923,455	05-08-1990	Dean
		US- 5,042,227	06-27-1991	Merry
		US- 5,261,531	11-16-1993	Nelvès
		US- 5,377,837	01-03-1995	Roussel
		US- 5,439,154	08-08-1995	Delligatti
		US- 5,443,161	08-22-1995	Jonese
		US- 5,638,661	06-17-1997	Banks
		US- 5,702,379	12-30-1997	Preiss
		US- 5,706,950	01-13-1998	Houghton
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		US- 5,826,714	10-27-1998	Martin
		US- 6,092,658	07-25-2000	Pietrafesa
		US- 6,168,022	01-02-2001	Ward
		US- 6,213,304	04-10-2001	Juliusen
		US- 6,298,993	10-09-2001	Kalozdi
		US- 6,528,766	03-04-2003	Parks

FOREIGN PATENT DOCUMENTS				
Examiner Initials*	Cite No.*	Foreign Patent Document Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
KG		JP 2002337814 A (Abstract)	11-27-2002	Kurimoto
		JP 2001131003 A (Abstract)	05-15-2001	Abe
		EP 1174104 A1	01-23-2002	Costea
		FR 2,583,388	12-19-1986	Fauville
		EP 0721886 A1	07-17-1996	Simmons
		GB 2,258,208 A	02-03-1993	Heidl

Examiner Signature		Date Considered	7/12/05

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## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 8 of 8

**Complete if Known**

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snel
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1032.011

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		Country Code <sup>2</sup> Number <sup>4</sup> Kind Doc <sup>3</sup> (If Known)	MM-DD-YYYY		
KG		GB 2,38,286 A	05-29-1991	Levin	
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		CH 671145 A5	08-15-1989	Leone	
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		GB 2,208,287	03-22-1989	Bourguignon	
▼		EP 0192417	08-27-1986	Carson	

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PTO/38108A (08-03)

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Substitute for form 1449/PTO

## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1

111

Complete it Known

Application Number	10/806,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	3761
Examiner Name	TBD
Attorney Docket Number	1032.011

**U. S. PATENT DOCUMENTS**

**FOREIGN PATENT DOCUMENTS**

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## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 1 of 1

**Complete If Known**

Application Number	10/906,828
Filing Date	March 8, 2005
First Named Inventor	Alan K. Snell
Art Unit	3761
Examiner Name	TBD

Sheet 1 of 1

Attorney Docket Number 1032.011

## U. S. PATENT DOCUMENTS

## FOREIGN PATENT DOCUMENTS

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<p>Substitute for form 1449/PTO</p> <p><b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b></p> <p><i>(Use as many sheets as necessary)</i></p>				<p><b>Complete If Known</b></p>	
				<p><b>Application Number</b></p>	10/906,828
				<p><b>Filing Date</b></p>	March 8, 2005
				<p><b>First Named Inventor</b></p>	Alan K. Snell
				<p><b>Art Unit</b></p>	3761
				<p><b>Examiner Name</b></p>	Keshia L. Gibson
Sheet	1	of	1	<p><b>Attorney Docket Number</b></p>	
<p>1032.011</p>					

## NON PATENT LITERATURE DOCUMENTS

Examiner Signature	<i>RG</i>	Date Considered	7/12/05
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**1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.**  
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<b>Notice of References Cited</b>	Application/Control No.	Applicant(s)/Patent Under Reexamination	
	10/906,828	SHELL, ALAN K.	
	Examiner Keshia Gibson	Art Unit 3761	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-3,986,479	10-1976	Bonk, Joseph P.	118/506
B	US-5,242,057	09-1993	Cook et al.	206/581
C	US-			
D	US-			
E	US-			
F	US-			
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

**FOREIGN PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

**NON-PATENT DOCUMENTS**

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	
V	
W	
X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

## **EXHIBIT F**

# Exhibit F

## SNELL CLAIMS

1. A diaper kit for a changing of a single diaper, comprising:
  - (a) a sealed substantially air impermeable encasement defining an airtight interior space, said encasement including at least one airtight seal;
  - (b) a single, compressed disposable diaper vacuum-sealed within said airtight interior space of said air impermeable encasement, said airtight interior space having at least a partial vacuum whereby a pressure differential acts upon said encasement and said diaper to maintain said diaper in said compressed state;
  - (c) at least one diaper accessory for use in the changing the single diaper; and
  - (d) a container in which is disposed,
    - (i) said encasement with said diaper vacuum-sealed therein, and
    - (ii) said diaper accessory, said diaper accessory being disposed outside of said airtight interior space of said encasement;
  - (e) wherein said container is dimensioned to fit within a pocket of an article of clothing for carriage on one's person.
2. The diaper kit of claim 1, wherein every airtight seal of said encasement at least extends a substantial extent of either a width or a length of said diaper vacuum-sealed therein.
8. The diaper kit of claim 1, wherein none of a length, a width, and a height of said encasement, within which said diaper is vacuum-sealed, is greater than four inches.
21. The diaper kit of claim 1, wherein said encasement, within which said diaper is vacuum-sealed, has three dimensions comprising a width, length, and height, and the sum of two of said three dimensions is less than 10 cm with no single dimension of said three dimensions exceeding 10 cm.